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Annual Conference of Hammermill Agents

Twentieth Yearly Get-Together Takes Place In Erie, Pa., and Attracts Large Attendance—Ernst R. Behrend Enthusiastically Greeted Upon Opening First Business Session Following Absence From Last Two General Meetings—Norman W. Wilson and C. W. Chabot Discuss Business Conditions and Their Effect Upon Paper Industry

Hammermill's twentieth annual conference with the agents who market the Hammermill lines was held in Erie, Pa., August 26, 27 and 28. Preliminary to the general conference, a meeting was held with the agents' advisory committee at Weigelia Lodge, the summer home of Norman W. Wilson, vice president and general manager of Hammermill, August 25.

Present at this meeting were R. S. Bull, chairman, Bradner Smith & Co.; Chicago; B. E. Reeves, The Alling & Cory Company, Rochester, N. Y.; A. D. Tayloe, Tayloe Paper Company, Memphis, Tenn.; G. W. Ward, D. L. Ward Company, Philadelphia; I. W. Carpenter, Jr., Carpenter Paper Company, Omaha, Nebraska; H. L. Carter, Carter Rice & Co., Boston; E. A. Petrequin, Petrequin Paper Company, Cleveland; Max Greenebaum, Beekman Paper and Card Company, New York City; C. E. Caskie, Caskie Dillard Co., Lynchburg, Va.; C. J. Babcock, Batten, Barton, Durstine and Osborn, Inc., New York City.

The three new members elected to the advisory committee to take the place of those whose terms expired this year are Geo. W. Ward, D. L. Ward Company, Philadelphia; A. D. Cleveland, E. C. Palmer & Co., Ltd., New Orleans, and Alan Chandler, The Alling & Cory Company, Pittsburgh. Richard S. Bull, Bradner Smith & Co., Chicago, was reelected chairman of the advisory committee for another year. F. G. Low, Green, Low & Dolge, Inc., New York City and W. N. Gillett, Chicago Paper Company, Chicago, were the two new members elected to the agents advertising committee.

Ernst R. Behrend, president of the Hammermill Paper Company, received a hearty greeting from the visiting paper merchants when he opened the first general business session August 26, after being absent from the last two annual conferences.

Norman W. Wilson, vice president and general manager of Hammermill and C. W. Chabot, director of distribution, spoke on business conditions in general and their effect on the paper industry. The particular merchandising problems that faced the conference were outlined by Harrison R. Baldwin, manager of sales, and A. Ellis Frampton, advertising manager.

The mornings of the last two days of the conference were devoted to an exchange of ideas between the visiting agents and the members of the Hammermill organization in an attempt to work out their mutual problems to best advantage.

The afternoons of these days were given over to golf on the links of the Kahkwa club where all the sessions of the conference were held, and other forms of outdoor recreation. Prizes were awarded the winners. Five golf prizes were also provided by the agents to be contested for by the Hammermill men.

Golf Contest Prize Winners

The following were the agent prize winners in the golf and quoits events which took place on Thursday: Low Gross, W. N. Stetson, Storrs and Bement Company, Boston, Mass.; Low Net, L. V. Mulnix, Carpenter Paper Company, Grand Rapids, Mich., and 2nd Low Net, W. N. Schaefer, R. P. Andrews Paper Company, Washington, D. C. *Obstacle Golf:* First Prize, E. R. Uphoff, The E. A. Bouer Company, Milwaukee, Wis.; Second Prize, B. E. Reeves, The Alling & Cory Company, Rochester, N. Y. *Quoits:* First Prize, Allan Chandler, The Alling & Cory Company, Pittsburgh, Pa.; Second Prize, James E. Alcorn, The Alling & Cory Company, Cleveland, Ohio.

The Hammermill prize winners on Thursday were: 1st, Knickers Handicap, John F. Parke; 2nd, Knickers Handicap, Stanley Byron; Obstacle Golf, Harrison R. Baldwin.

At the agents golf and quoits events on Friday, the following were the prize winners: Low Gross, A. M. Miller, Central Ohio Paper Company, Columbus, Ohio; Low Net, R. S. Johnston, Old Dominion Paper Company, Norfolk, Va.; 2nd Low Net, D. S. Landau, The Alling & Cory Company, New York City. *Obstacle Golf:* First Prize, G. E. Caskie, Jr., Caskie Paper Company, Lynchburg, Va.; Second Prize, W. M. Baxter, Jr., Baxter Paper Company, Baltimore, Md. *Quoits:* First Prize, J. N. Knablein, Durico Paper Company, Erie, Pa.; Second Prize, B. R. Moore, Andrews Paper House, York, Pa.

The Hammermill prize winners on Friday were: 1st Knickers Handicap Parke Herrick; 2nd Knickers Handicap, Wilbur Eldredge.

Visitors to the Conference

Hudson Valley Paper Company, John R. Binley and Sydney T. Jones, Albany, N. Y.

(Continued on page 66)

Pennsylvania Paper Mills Speed Production

Lower Temperature Experienced Brings Increased Orders for Autumn Stocking — Demand for Wrapping Paper, Bags and Containers More Active—Fine Paper Shipments Moving In Greater Volume—Paper Stock Market Improves

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa. August 31, 1931—Growing orders and the advent of cooler weather were factors for a more optimistic attitude in the Quaker City trade, as both dealers and manufacturers found business on the mend. The advent of the cold spell brought stimulation in demand for many lines of papers used in manufacturing industries which have been dormant throughout the dog days. Noteworthy gain was shown in the paper manufacturing division of the industry as the colder temperature brought a share of orders for the coming Fall. While it is not expected that the present lower temperature will remain, it is believed that the falling mercury has spread interest in Fall stocking and the paper mills were given a share of business heretofore withheld as the hot spell continued and took many from the city to the cooler haunts of country and seashore.

Following the falling temperature there was good demand for wrapping paper and for specialties such as manufacturers of various textiles and clothing use. Hot weather supplies dropped considerably in volume. Bags and containers were in better demand. Box makers papers were in broader request. Fancy box makers papers were among the lines moving in better volume. While the trade has been showing signs of growing interest on the part of consumers of fine paper in large volume under contract, distributors have just lined up with wholesalers of book and printing paper and fine writing grades by improvement in shipments to distant points. Local city orders are still confined to small lots, but out of town consumers show greater inclination to buy on broader scale and demand rush shipments, indicating improvement of marked character in the last week.

As manufacturers expand operations, orders for paper stock grow accordingly. Wholesalers state that demand for the better grades discloses shortage of supplies and prices were slightly advanced for the week. The most encouraging news for the waste trade was the sudden spurt of buying in old news and mixed papers. There was good volume of tonnage moving from warehouses here as mills took on a buying mood. Dealers were pleased with the trend towards broader shipments and mill orders, as well as inquiries. Rags moved freer but held prices.

Scott Paper Co. To Start New Machine

The recently completed record producing paper machine of the Scott Paper Company, Chester, Pa., which has been under construction by Moore and White Company, Philadelphia manufacturers of paper making equipment, 15th street and Lehigh avenue, will be placed in operation in the coming week. The new equipment has a record breaking production of 1,200 feet per minute and will be given over to the manufacture of Scott tissues. Its speed has never before been reached in the manufacture of tissues and will give the Scott Company an additional capacity above average machines of 30 tons per day. It supplants the former tissue machine which was dismantled to make way for the new equipment that the Moore & White Company has had under construction during the summer and which was begun last Spring. The Scott Paper Company is now the producer of the greatest tonnage of tissues in the world and has a distribution that extends throughout the United States and to foreign countries. Its paper units are designed under its own patents and include record breaking as well as unique machines made to meet its special requirements for speed and converting into allied lines of sanitary products and towels.

Paper Trade Golf Tournament Off

Owing to present business conditions the annual paper trade golf tournament conducted yearly by the Paper Trade Golf Association, will be called off. The tournament is held every Fall but this year none is to be called owing to the business situation, as announced by the committee with the following members who usually arrange the program.—Arthur B. Sherrill, E. A. Weihenmayer, of the Jessup & Moore Co., Irving Megarge, Curtis & Bros. Inc. and Allen E. Whiting, of the Whiting Paper Company. It is expected that a substitute golf tournament will be arranged by the association for next spring, the local members holding the annual affair at that time instead of the yearly Fall golf match for 1932. It has been customary for the Golf Association to hold the tournament in the Fall but owing to the postponement of this year's event the 1932 Spring Tournament will supplant the 1931 Fall game.

Howard Satterthwaite Visiting Mills

Howard Satterthwaite, of the Satterthwaite-Cobaugh Company, 217 Chestnut street, is touring New England and the Lake Regions, combining a business and vacation trip. He will stop over and visit paper mills en route and spend some time in Michigan visiting the Allied Paper Mills at Kalamazoo. He will be at his desk again after Labor Day.

Huff Paper Co. Adds Cellophane Bags

Having taken over distribution of the cellophane bags made by the Continental Paper and Bag Corporation, the Huff Paper Company, Delaware avenue and Spring Garden street, has augmented these and added the line of cellophane window bags which that corporation now is featuring with its other new bags. These cellophane window bags are carried in all sizes used for merchandising and manufacturers purposes, as display or protective coverings for their products. The Continental cellophane bags come in all grades as well as sizes, and have been growing in distribution since the Huff Company took over these products this summer and began sales promotion work on the line.

Philip H. Glatfelter Made Railroad Director

Philip H. Glatfelter, president of the P. H. Glatfelter Paper Company, Spring Grove, Pa., has been elected a director of the Western Maryland railroad. He also is president of the Hanover Wire Cloth Company, Hanover, Pa.

Matthias Paper Corp. Adds Embossed Papers

To the wide range of specialties in paper box manufacturers papers distributed and made especially for its own purposes, the Matthias Paper Corporation, 143 North 5th street, has added embossed grades on white and colors and

fancy designs. There will be marketed under the Sun Rise Line which is the firm's own mark. Charles Matthias is now on the Pacific Coast introducing the new lines and will return to Philadelphia by way of the Southern States in a tour of that section visiting the paper and box manufacturers.

Philadelphia TAPPI Section Being Formed

With the meeting of the committee appointed to organize and promote the interest of the Philadelphia Section of TAPPI recently at the offices of Charles Rivise, 1321 Arch street, there were discussed articles drawn up for the organization and the by-laws and constitution and preparation of these for submission to the Technical Association of the Pulp and Paper Industry and approval of the executive committee of that body. The committee on organization of the Philadelphia Section, which met here included William M. Shoemaker, Jr., National Vulcanized Fibre Company, Yorklyn, Del.; Dr. H. C. Schwalbe, Dill & Collins Company, Philadelphia; Dr. G. E. Landt, Continental Diamond Fibre Company, Bridgeport, Pa.; James H. Hazelwood,, Lang Paper Company, Gloucester, N. J.; Dr. R. T. von Hazenburg, Scott Paper Company, Chester, Pa., and Harvey C. Cannon, of the Container Corporation of America, who has been active in promoting the organization.

Election of officers to the newly organized section of the Technical Association of the Pulp and Paper Industry will take place on Tuesday evening September 15, at a special dinner and business meeting to be held at Shoyers Cafe, 4th and Arch streets. All paper mill technical men and mill superintendents in and near Philadelphia will be invited to attend with men holding similar executive positions in allied industries also participating in the organization and election. The dinner will be served at 7 o'clock and will be followed by the organization and election of officers and enrollment of members. There will be two interesting speakers at the dinner session who will talk on topics that will be of importance to the industry.

Butcherwrap for National Waterproofing Co.

An entirely new product in the way of butchers wrapping paper has been developed by the National Waterproofing Company, with offices in the Drexel Bldg. and plant in Camden. The new grade is known as Butcherwrap and is a strong waxed paper of exceptional strength and low cost. As stated by Isaac Collins, head of the firm, the paper is an ideal wrap for meats, fish and any article containing moisture and can be used for many other purposes.

Philadelphia Quartz Issues Anniversary Booklet

An anniversary booklet commemorating the first century of its business history has been compiled by the Philadelphia Quartz Company, 121 South 3rd street, producers of silicate soda in many grades for commercial usage and chemical application. The booklet entitled "Beginning Another Century" contains the details of the history of the business from its original foundation as a soap and candle factory in 1831, with the strides attained throughout its 100 years to the present date. Throughout the progress of the firm the silicate of soda division became the main product of manufacture and production and in 1904 the Quartz company ceased to manufacture soap, giving its entire interest to soluble silicates. It was founded by Joseph Elkinton and was conducted by him for more than twenty years, then taken over by his sons, Joseph S., Asa and Thomas. In 1855 it became Joseph Elkinton and Son. William T. Elkinton is present chairman of the board of directors, and became associated with the firm in 1879. The president of the present Philadelphia Quartz Company, of California, Alfred C. Elkinton, joined shortly afterward. It was incorporated in 1904 under the present title which more definitely defines its business concentrated upon development of manufacture and uses of silicate of soda, produced as a low priced commodity. The need of establishing plants where economy of production enables low cost to the consumers dictates their location and nine plants are now maintained near raw material sources and favorable delivery centers at Chester, Pa.; Anderson, Ind.; Baltimore, Md.; Gardenville, N. Y.; Kansas City, Kan.; Rahway, N. J.; St. Louis, Mo.; Utica, Ill., and Berkeley, Cal.; while general headquarters are at 121 South 3rd street. Engineering staffs and chemical services are at the disposal of industries seeking to consult the firm regarding their needs for silicate soda.

Whiting Paper Co. Has New Line Papeteries

Latest 1931 holiday and year round lines of papeteries are now being shipped to the trade and to the stationery consumers by the Whiting Paper Company, with Philadelphia offices at 619 Chestnut street. The new papeteries include several hundred numbers, among them the latest in fancy paper.

Albemarle Paper Mfg. Co. Offers Blottings

G. R. Mattson, who represents the Albemarle Paper Manufacturing Company, with main offices in Richmond, Va., in the Philadelphia territory, called on the dealers with the new and standard blottings for the Fall stocking made by the southern manufacturer. There are many new shades to harmonize with desk sets and office and bank furnishings and standard shades and grades for all purposes in the 1931 offerings.

Groveton Paper Co.'s New Engravers' Lines

Having introduced an entirely new line of greeting card stock and engravers' papers, the Groveton Paper Company, with mills at Groveton, N. H., represented in the Philadelphia trade by Frederick I. Brower, with offices in the Lafayette Building, has been sending samplers to distributors and consumers. The new samples show various grades, finishes, colors in Indian and white and weights.

Corrugated Container Personnel Changes

Having completely re-equipped its plant with new machinery and providing for increased production of corrugated containers, the Corrugated Container Company, Trenton avenue, and Venango street, has extended its personnel by election of John F. Connelly to the vice presidency and as a director and Harold J. Hayes secretary of the company. Vice president Connelly was formerly sales manager and Secretary Hayes his assistant, both rising from the rank of employees to officers in the Company. Connelly started as office boy ten years ago while Hayes started as junior salesman shortly after. They are the youngest executives in the corrugated container industry. The new units consist of converting equipment, such as scorers, taping, printing and other corrugated equipment which enables the firm to increase its production over twenty per cent. The other officers of the company are Joseph Wertheimer, president, and Albert A. Light, treasurer and general manager.

Officials of the Canadian Paper Board plant at Frankford, Ont., have announced that if certain concessions can be obtained from the village council, the pulp mill, which has been closed over a year, will probably be reopened within the next few weeks.

Consolidated Inaugurates Five-Day Week

President George W. Mead Announces Adoption of New Policy Which, In Future, Will Be Regular Schedule In All Company's Mills—Prevailing Wage Rate Per Hour Will Be Continued—Present Workers Will Be Retained and Few More Added

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., August 31, 1931.—Inauguration of a five-day week as a fixed policy was announced last week by George W. Mead, president of the Consolidated Water Power and Paper Company, with mills at Wisconsin Rapids, Stevens Point, Biron and Appleton, Wis. The plan has been operative for the last two weeks in all of the mills and now will be the regular schedule.

Upon completion of an extensive program of expansion, remodeling and replacement of obsolete equipment, the Consolidated company found it might get along with thirty to forty men less. Under the five-day week plan, it will be possible to retain these men and give employment to a few more. Each employee will get five days' work out of each seven and there will be no discrimination in regard to the number of days' work given any employee. Men are being trained to handle jobs of those who will be absent. About 75 men will be off one day of each working week. The mills will operate on their full schedules as before. Prevailing wage rates per hour will be continued. It is believed by Mr. Mead that this much talked of idea for relieving unemployment should be put into practice. The company's decision is in line with the policy of the American Federation of Labor and is recognized because of the fact that union labor is employed by this company.

Nekoosa-Edwards Cuts Wages

Effective September 1, the Nekoosa-Edwards Paper Co., operating mills at Nekoosa and Port Edwards, Wis., will reduce wages ten per cent. The cut will apply universally to both mill and office, and will mean the hour rate is reduced from 45 to 40 cents on the average. About 1,000 employees are affected, with the exception of 350 men whose working day was reduced on February 15 from nine to eight hours, virtually amounting to a reduction for them. The company announced this step after making a survey of paper mills throughout three states and finding that they were one of only four that had not made a reduction. There is to be no reduction in the number of hours a man may work and the mill has no immediate plan for curtailing production. Until very recently the company has been able to maintain a record of 90 per cent of normal production and has a liberal amount of orders booked ahead for the fall and winter months.

Forest Products Laboratory Contract Let

The contract for the new United States Forest Products Laboratory at Madison, Wis., has been let to C. B. Fritz & Co., Madison, according to announcement from Washington. The building and equipment will cost $900,000. It will be the largest in the world devoted to the study of forest research and will be equipped with every scientific device used in wood research known to forestry. Plans indicate that the building will be U-shaped, six stories high and have a length of 275 feet. A large part of the exterior space will be glass, affording as much daylight as possible for the workers. There will be 175,000 square feet of floor space in the building.

In addition to various equipment of use to the lumber and building industry, there will be a special pulp and paper research laboratory fitted with pulp grinders, a digester tower 40 feet square, and an experimental paper making machine. Every quality of wood used for paper can be tested. The laboratory also will have an X-ray room for study of minute structures of wood. Ultra violet ray equipment will sterilize wood for mycological study. The building will have its own sidetrack and hoists and elevators for the handling of logs on arrival.

One section of the laboratory will be devoted to a study of fungi, timber parasites, insect pests and timber diseases. There will also be a completely equipped wood chemistry laboratory. The building also will have its own sawmill.

The forest products laboratory was started in 1910.

Governor Honors F. J. Sensenbrenner

F. J. Sensenbrenner, president of the Kimberly-Clark Corporation, Neenah, Wis., is one of seven Wisconsin men to be chosen as members of the executive council of Governor Philip F. LaFollette, of Wisconsin. The council was created by the last legislature and consists of twenty persons, including members of the senate and assembly. The purpose of the council as expressed by the governor is "to bring to the state government the council and advice of selected representatives of the economic life of the state. It is expected the council will maintain a continuous inventory of the state government and its functions and make suggestions as to how the state may operate more efficiently and economically."

News of the Industry

County forests totalling 117,920 acres will be established shortly by Bayfield county, in Northern Wisconsin, according to a survey made by a special zoning committee of the county board in co-operation with F. B. Trenk, state extension forester. The data will be submitted to the state conservation commission, and if the forests are entered under the state forest crop law, they will give the county and townships a revenue of ten cents an acre from the state until timber is grown and cut.

Extra precautions are being taken all over northern Wisconsin to guard against forest fires. The summer has been exceedingly dry and conditions are ripe for disastrous timber fires. Every effort will be made therefore to prevent fires from starting or extinguish them quickly before they can make headway. The fires are the biggest annual source of timber loss.

Two deaths occuring during the last week were those of Joseph F. Schlegel, of Menasha, Wis., and John H. Fiedler, Appleton, Wis. Mr. Schlegel was department foreman for the Gilbert Paper Company, Menasha, Wis., until his retirement two years ago, and had worked for the company for nearly half a century. Mr. Fiedler was a department foreman for the Fox River Paper Company, Appleton, Wis., where he had worked for 31 years and also was alderman of his ward in the city council for six years.

Frank B. Whiting, president of the George A. Whiting Paper Company, Menasha, Wis., is completing construction of a fireproof boat house near his home, 64 by 36 feet in size. In will house two cabin cruisers which afford Mr. Whiting a great deal of his summer's pleasure on Lake Winnebago. The doors to the boat house will be operated by radio from the dash board of the ship.

Ontario Paper Mills Are Moderately Active

Some Improvement Noticed In Fine Paper Demand—Book Paper Manufacturers Quite Busy At Present—Bond, Ledger and Writing Papers Moving In Fair Volume — Although Paper Box Industry Is Quiet, Board Mills Are Gradually Picking Up

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, August 31, 1931.—A fair amount of business is passing in wholesale paper circles in Ontario and the tone is distinctly optimistic, particularly in the fine paper section. Demand for all classes of fine papers has kept up fairly well considering the holiday season and although there is little bulk selling consumers are placing enough orders with the wholesalers to ensure some nice business from month to month. There have been some months, it is true, when sales were considerably down but there has been enough business from week to week to maintain a better average than was looked for during the summer months.

While retail trade has been quiet and while it caused a dropping off in paper consumption, the sale of books, bonds and ledgers has been keeping up during the holiday months a good deal better than was anticipated and there is a feeling that some really good business in the wholesale paper line is not far around the corner. The printing trade has been fairly busy and a considerable amount of work is said to be due for release as the summer closes. All told the Ontario paper wholesale firms have little to complain of and a whole lot to be thankful for.

There is a fair degree of activity in paper manufacturing circles. Book paper mills are quite busy, while bonds, ledgers and writings are in fair demand. There is a satisfactory measure of prosperity in the fine paper manufacturing section generally, in which coated paper, also, is participating. Paper converting lines, such as envelopes and manufactured stationery, are still somewhat backward, although there has been some slight improvement in this department during the past few weeks. Some increased business has come the way of the light weight paper manufacturers since the recent drop of 3 per cent. on various lines of tissues and toilets and it is believed that foreign competition will eventually be overcome.

Prices of boxes are down and despite this fact and the further fact that nearly all of the smaller commodities are now enclosed in cartons, the Ontario paper box manufacturers are operating very lightly. Plants which at this time should be getting out Fall supplies are operating at less than half capacity. In this connection C. V. Hodder, secretary of the Canadian Paper Box Manufacturers' Association, has this to say: "It is exceedingly interesting to hear the new note of confidence as to the future development of business. While at this season of the year we are slack there would appear to be a new spirit of optimism, possibly based on reports of business to be placed this Fall. It is doubtful if the return of better times will show any early marked improvement in volume, but it would seem that there is real cause for the belief that we have not merely reached the bottom but we are actually on the up-grade and can look forward to a gradual return to more normal conditions."

Bathurst Produces Kraft Board

Trial shipments of kraft Fourdrinier board manufactured by Bathurst Power and Paper Company, have been received in Toronto. This represents initial production from equipment recently installed at a cost of $100,000. Owing to the unsatisfactory market prevailing last year for kraft pulp the Bathurst management decided to manufacture the finished product. Necessary operations were commenced last year to convert one of the news print machines for the manufacture of kraft container board. It is stated that this mill is now on a 24-hour shift for six days a week. Business conditions and the situation in the news print industry in particular adversely affected operations of the company in 1930. Production of news print for the year was about 61 per cent. of capacity, while operations of the sulphite and kraft mills were drastically curtailed. Earnings were $132,954 as compared with $281,550 in the previous year. No provision was made last year for depreciation of building, plant and machinery, though depletion of timber limits at the rate of $1 a cord on wood cut was provided.

Notes and Jottings of the Trade

Notices have been sent out announcing the next general meeting of the Paperboard Industries Association to be held at Niagara Falls, Ont., on September 15, 16 and 17. This is the first time in its history that the organization has met in Canada. It embraces the folding carton, corrugated box and board manufacturing industries.

J. R. Booth, Ltd., of Ottawa, known from pioneer days in the paper, lumber and pulp industries, have announced the appointment of W. P. Bennett & Son, Toronto, as their exclusive representatives in Ontario. The J. R. Booth Company specializes in the manufacture in all grades of high class boxes.

R. E. McKillop, of the merchandising department of the Somerville Paper Box Company, Ltd., London, Ont., has been moved to Toronto where he has been appointed manager of the office in that city.

Canada Paper Company will hold a special meeting of shareholders in September to ratify the arrangement whereby the control and management passes to Howard Smith Paper Mills. The ownership passed from the Kilgour estate to the St. Maurice Valley Corporation. The plant has been operated for some months by the Howard Smith organization.

George Carruthers, president of the Interlake Tissue Mills, has returned to Toronto with his family after holidaying in Muskoka.

W. S. Barber, in charge of the coated paper division of Provincial Paper, Ltd., has returned after a vacation spent at Bigwin Inn.

At the recent Cornwall Legion Athletic meet in Cornwall, Ont., the Beauharnois Division of the Howard Smith Paper Mills carried off the championship in the soft ball, defeating Cornwall and the Royal North West Mounted Police team from Ottawa. A year ago the team won the cup by defeating some of the best teams in Eastern Ontario.

Griffiths Joins Bloede Co.

L. L. Griffiths, Jr., otherwise known as "Buster," has joined the sales force of Victor G. Bloede Company, Inc., makers of dextrines, gums, sizings and vegetable glue, of Baltimore, Md., and will represent the organization in the Middle West.

TAPPI Fall Meeting Program

Plans are practically complete for the Fall Meeting of the Technical Association of the Pulp and Paper Industry which will be held in Kalamazoo, on Thursday, Friday and Saturday, the 24th, 25th and 26th of September. The program is complete, and only a few minor details remain to be arranged, according to Ralph Hayward, General Chairman.

The local committee in charge of arrangements has spent a great deal of time and thought in planning a program which will be of real value to every member of TAPPI, and a wide variety of subjects are to be covered as indicated by the following program.

Technical Program

THURSDAY MORNING, SEPTEMBER, 24

9:00 A. M. Registrations at Park American and Columbia Hotels.

10:00 A. M. Business Session convenes in Crystal room of Columbia Hotel.
"Sulphate of Alumina," J. J. Healy, Jr.
"An Attempt to develop a Laboratory Procedure for the determination of the Sizing Ability and efficiency of Beater sizing Agents," A. C. Dreshfield, H. G. Haggerson, Henry Heller.
"A Study on the Bleaching of Kraft Pulp," Dr. Otto Kress, Roy L. Davis.

12:00 Noon Committee meetings in side rooms opening off from Crystal Room.

THURSDAY AFTERNOON, SEPTEMBER 24

1:00 P. M. Luncheon in Crystal Room, Columbia Hotel.
"Determination of Training Problems in the Pulp and Paper Industry," H. G. Noyes.
"The Story of Nitrocellulose," moving picture and talk, J. K. Speicher.

3:30 P. M. Visit Rex Paper Co. and Hawthorne Paper Co. (or play golf).

3:30 P. M. Special meeting of the Buyers Group of the National Association of Purchasing Agents. "Pulp Contracts" will be discussed. Columbia Hotel.

THURSDAY EVENING, SEPTEMBER 24

6:30 P. M. Informal Dinner, Columbia Hotel.
Toastmaster, "Uncle Bob" Dreyenforth.
Address of Welcome, Mayor Dr. S. R. Light.
Response, President M. A. Krimmel.
Speaker, Jacob L. Crane, City Planning Engineer.

FRIDAY MORNING SEPTEMBER 25

9:30 A. M. Busses leave Columbia Hotel for Parchment, Mich.

10:00 A. M. Business Session convenes in Auditorium of Parchment Community House.
"Deinking Wastes," C. C. Irving.
"Deinking Waste Paper Stock," C. A. Shubert.
"Steam Requirements for the Deinking Process," E. G. Milham.
"The Reuse of Relief and Waste Liquors in Sulphite Cooking Acid," G. H. Chidester, G. E. Hrubesky, J. N. McGovern.

FRIDAY AFTERNOON, SEPTEMBER 25

1:00 P. M. Luncheon in Community House Dining Room.
"Chrome-Nickel Castings in the Sulphite Industry," B. S. Summers, J. D. Corfield.
"The Estimation of Cellulose in Pulps by the Kurschner-Hoffer," Dr. Harry F. Lewis.
"Alcohol-Nitric Acid Method," E. R. Laughlin.
"Air Conditioning in the Paper Industry," W. G. Schlichting.

3:00 P. M. Visit K.V.P. mills and laboratories of the Paper Makers Chemical Corporation (or play golf).
Busses will be ready to take visitors back to town as soon as they are ready to go.

FRIDAY EVENING, SEPTEMBER 25

6:30 P. M. Informal Dinner. Park American Hotel, W. J. Lawrence, Presiding.
Toastmaster, ————.
"The Cycles of Civilization," Dr. W. D. Henderson, Univ. of Michigan.
Installation of the Kalamazoo Valley Section of TAPPI and its Officers, by Officers of National Association.

SATURDAY MORNING, SEPTEMBER 26

9:00 A. M. Busses leave Columbia Hotel for Gull Lake Country Club.

10:00 A. M. Business Session convenes at Country Club.
"A comparison Between Flint Pebbles and Porcelain Balls as a Means of Hydrating in the Pebble Mill Test," F. C. Peterson, N. Y. State College of Forestry, Syracuse University.
"The Relation of Strength Properties and Fiber Properties in Paper."
"The Variation of Tensile Strength with Basis Weight and Related Factors," R. H. Doughty.
"Some Notes on Loss in Yield and Quality of Pulp as Occasioned by re-cooking the same in digesters which were not Blown Clean," Dr. Otto Kress, Harry J. Irwin, Karl L. Buff.
"Hydration Measurements by the Boiling Method," T. R. LeCompte.

SATURDAY AFTERNOON, SEPTEMBER 26

1:00 P. M. Luncheon at Gull Lake Country Club, E. F. Whittington, Presiding.
"Measuring the Efficiency and Proving the Value of the Chemical Engineer," H. C. Bradford.
"Measurement of Opacity of Paper," Dr. M. N. Davis.
"Technical Cooperation in Development of Cost Standards," T. J. Burke.

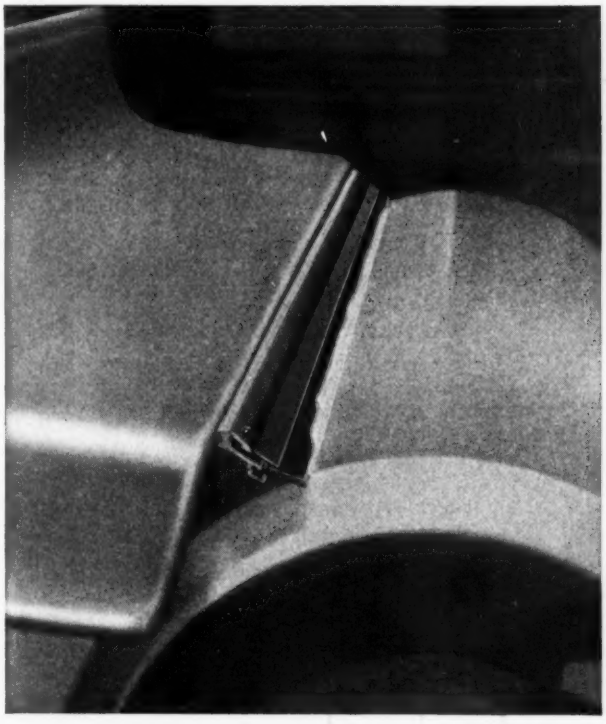
3:00 P. M. Recreational Program.
Golf, Quoits, Swimming, Boating, etc.
Prizes for Golf

Ladies' Program

The following program is announced for the entertainment of the ladies who plan to attend the convention. Due to the inability to serve, of those originally appointed to the Ladies' Committee, a new committee was appointed consisting of Mrs. E. F. Whittington as Chairman, Mrs.

Here is the PERFECT PRESS ROLL DOCTOR

- ✻ *The Vickery Hi-Angle Doctor is perfectly flexible,* **under all** *conditions.*
- ✻ *It keeps press roll surfaces clean . . . mirror-smooth.*
- ✻ *It works automatically, with no tinkering or fitting.*
- ✻ *It is absolutely water-tight.*
- ✻ *It uses simple, inexpensive blades.*
- ✻ *Blade replacement—when it's finally necessary—requires no tools, can be done in one minute.*



The Vickery Hi-Angle Doctor is right.
Let it prove itself on one of your own press rolls—at our expense.

BIRD MACHINE COMPANY
SOUTH WALPOLE • MASSACHUSETTS

VICKERY HI-ANGLE DOCTOR

4987

Ralph Hayward, Mrs. Kent Kidder, Mrs. W. J. Lawrence, and Mrs. F. D. Libby. A full program of events for the three days have been planned as follows.

THURSDAY MORNING, SEPTEMBER 24

9:00 A. M. Registration in Hotels Columbia and Park American.
10:00 A. M. to 11:30 A. M. Local Ladies' Committee meets visiting ladies in ladies' lounge, Hotel Columbia.
12:45 P. M. Ladies re-assemble in Ladies' Lounge of Columbia Hotel.
12:55 P. M. Leave Hotel for Gilmore's Tea Room. The trip is short and the ladies can aid the local committee materially by keeping together.
1:15 P. M. Luncheon in Gilmore's Tea Room.
2:15 P. M. Buses leave Gilmore's Department Store, rear entrance, for Kalamazoo Vegetable Parchment Co.
2:30 P. M. Demonstration by Domestic Science Expert, showing how various types of paper can be used to advantage in the home.
Trip through the Kalamazoo Vegetable Parchment mill.
4:45 P. M. Busses leave Parchment for the hotels.
6:45 P. M. Busses leave Columbia Hotel for a special dining place.
7:00 P. M. Dinner.
8:45 P. M. Theatre party at State theatre.

FRIDAY, SEPTEMBER 25

10:00 A. M. Leave Hotels Columbia and Park American for motor drive around Kalamazoo.
Automobiles for the tour are furnished through the courtesy of the Brophy-Chevrolet Sales Co. of Kalamazoo.
12:45 P. M. Busses leave Columbia Hotel for Luncheon.
1:15 P. M. Luncheon at the Happy Huntsman Tea Room.
2:15 P. M. Bridge Party in parlors of Happy Huntsman Club house.
4:45 P. M. Busses leave for the hotels.
6:30 P. M. Informal Dinner with the men at Park American Hotel.

SATURDAY, SEPTEMBER 26

11:45 A. M. Busses leave Hotels Park American and Columbia for Gull Lake Country Club.
1:00 P. M. Luncheon with the men.
3:00 P. M. Recreational Program.
Golf, Bathing, Games.
Trip around Gull Lake on one of the passenger boats.

Purchasing Agents to Meet

Due to the fact that both the Columbia and Park American Hotels are to be used by those attending the convention, registration desks will be placed in each hotel to facilitate the registrations of members. As previously mentioned, these hotels are directly opposite each other, and meetings will be held at both places as noted in the program.

Included in the program is a meeting of the Buyers group of the National Association of Purchasing Agents at which time the subject of Pulp Contracts will be discussed. This group has in mind to broaden the specifications covering Pulp purchases, particularly as regards strength standards, cleanliness, and any other specifications which would be of value to the consumer. The committee feels that the chemists are vitally interested in these subjects and therefore has arranged for this meeting in order that both the buyers and technical men may have an opportunity to get together and express their views on this subject. A considerable number of purchasing agents are planning to attend this meeting.

Railroad Service

Kalamazoo is easily accessible either by railroad or by motor. Four railroad systems serve the city and provide convenient connections for all directions. It is located half way between Chicago and Detroit on the main line of the Michigan Central railroad, thereby making is possible to reach most any point in the country with only one change. The Pennsylvania railroad operates from Cincinnati to Kalamazoo, and branch lines of the New York Central and Grand Trunk systems also pass through Kalamazoo.

The committee wishes to stress the fact that the railroads have agreed to grant a special fare and one-half rate for the round trip, providing that 150 certificates are presented for validation at the convention. It is therefore important that all those who can, should travel by train, even for a short distance, and when buying your ticket to Kalamazoo, be sure to ask your local agent for a convention certificate. Short distances count just as much as the longer distances, so plan to come by train and don't fail to ask for the certificates.

Those planning to drive to Kalamazoo, will also find it easily accessible with wide concrete highways leading into the city from all directions. U. S. highway No. 12 passes through Kalamazoo, and also U. S. highway No. 131. Southern Michigan is particularly attractive at this time of year, and those who plan to drive will find a great deal of attractive scenery enroute.

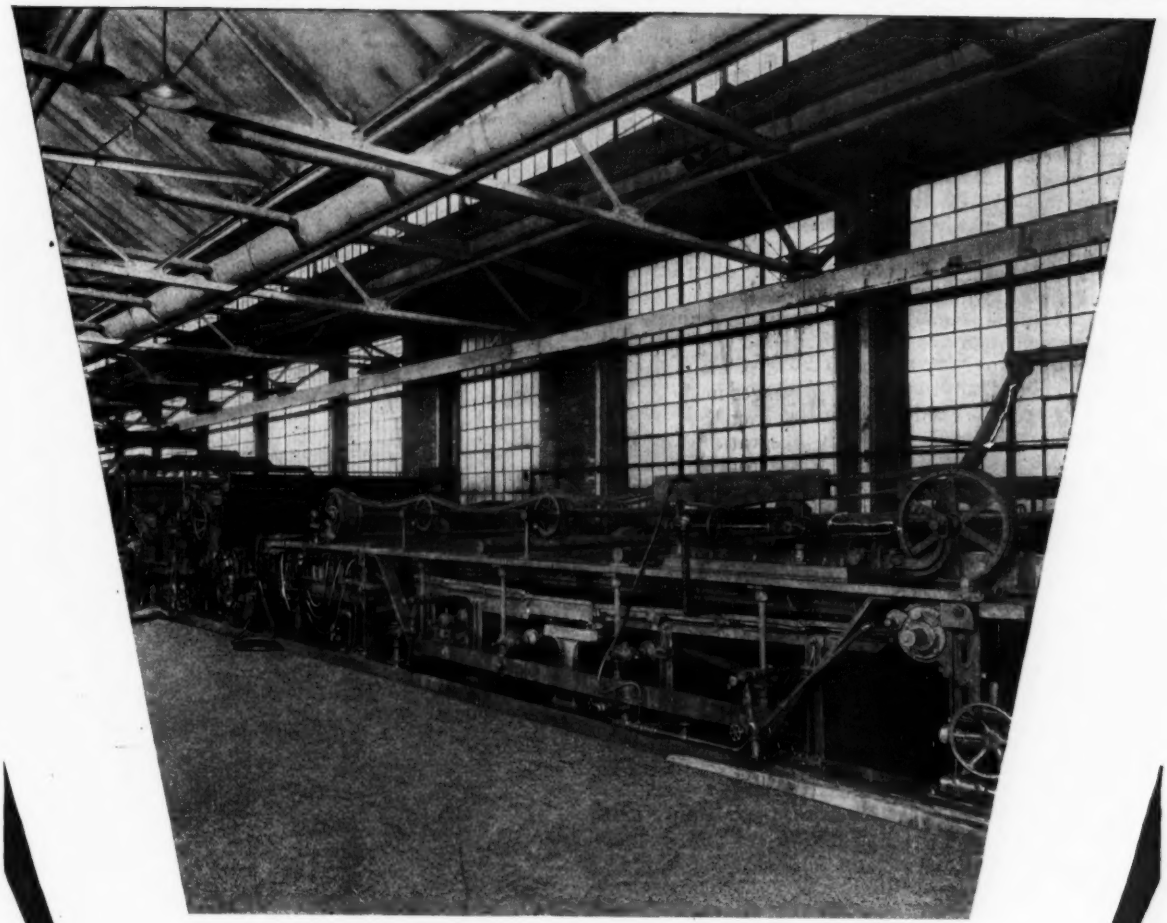
Paper Salesmen Hold Golf Outing

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., August 31, 1931.—Thirty members of the Middle West Division of the Salesmen's Association of the Paper Industry and their guests enjoyed a golf outing at the Cherry Hills Golf Club on August 21. The feature event of the day was the competitive singing school staged with Jim Coy and Ray Russell as the main competitors. Jim, absent from the golf outings for some time, found his place as main songster virtually usurped by other yodelers and it was only after plenty of time and effort that he regained his rightful place. The luncheon and dinner were both enjoyable events but, of course, the golf was the big thing. Prize winners were as follows: Low net, P. M. Allen, Combined Locks Paper Company; Low score on par three holes, Tom Salsman, Rockwell-Barnes; Low Gross, Henry Johnson, of the Brown Company; Least number of putts, Robert Bender, Gartner & Bender; High gross, Ross M. Sleek, Sleek-Warwick Paper Company, Kansas City; low net foresome, Herbert Larkin, Bryant Paper Company; Ed Beimfohr, Crocker-McElwain; E. A. Rohrer, Empire Paper Company and A. L. Redfield, Munising Paper Company. Low putt foresome honors were shared by George K. Gibson, of Mosinee; Warren Winn, Mosinee; Harrison Starr, Brown Company and LeRoy Giddings, Byron-Weston.

The next, and final event of the golfing season will be held September 17 at the Park Ridge Country Club. Between $75.00 and $125.00 will be spent on prizes and a big list of players—members and guests—is expected. The last event, in which the divisions compete for the Harbison trophy, the Presidents trophy, and the *American Paper Merchant* trophy, is always the important outing of the year. In addition to the big national prizes a long list of local prizes will be on the board for the golfers to shoot at.

DOWNINGTOWN



9 PT. STRAW MACHINE
···SUCTION ROLLS···

Eleven years ago we built a Nine Point Straw Machine for the Hinde and Dauch Paper Co., and at the suggestion of their Vice President, Mr. Joseph Harbrecht, it was originally equipped with a Suction Couch, Suction First Press and Suction Second Press Roll. In 1920 this was the fastest machine in the world, making nine point straw. Today, in 1931, this machine is still the fastest and its limit has not yet been reached. Our Catalog No. 103 fully describes the advantages of the Downingtown Suction Roll. Write for a copy. The Downingtown Manufacturing Company, Downingtown, Penna.

New National Paper Products

Within the past few months the National Paper Products Sales Company, selling agents for the Crown Zellerbach Corporation, have introduced nationally several new folded toilet tissues under the brand names of Twin Fold, Alpine and Duo Fold. These, combined with the old and well known "No Waste" brand, constitute one of the finest and most complete lines of folded toilet tissues on the market.

These brands are being used by hundreds of hotels, office buildings, hospitals, factories, schools and other public and semi-public buildings throughout the United States, and in conjunction with the No Waste Cabinet they represent the utmost in toilet tissue service from the standpoint of quality, economy and satisfaction to the ultimate user. The No Waste and Twin Fold brands are made of unbleached tissue, while the Alpine and Duofold brands are made of high grade bleached tissue, pure white in color and exceptionally soft and absorbent. An outstanding feature of the Alpine and Duo Fold is that their use in public buildings helps to prevent stoppages in the plumbing. This is accomplished through the fact that the soft texture of the tissue causes rapid disintegration after contact with water. These new pure white toilet tissues are excellent "running mates" to the Public Service Pure White Paper Towel, another product of the National Paper Products Company, which was successfully introduced throughout the western states slightly over a year ago.

It is of interest to note that the manufacture of folded paper towels originated in San Francisco about 19 years ago, according to L. J. Arms, Western sales manager of the National Paper Products Sales Company, who also acts as Western manager of the Sanitary Products Corporation, another Crown Zellerbach subsidiary. Mr. Arms did considerable pioneering and educational work incidental to the introduction of folded paper towels as early as 1912, through the Zellerbach Paper Company. He is also recognized, in the West, as an authority on folded and roll toilet papers, having had charge of the mill distribution on " No Waste" and other "National" brands, in the Western States since 1921.

The National Paper Products Company have started production on several new brands of roll toilet tissue, among them being "Avalon," a 1000 sheet roll of pure white tissue of superior quality. This roll is being introduced to retail dealers by means of a new and unique plan of merchandising, and advertising toilet paper which has recently been developed by Arms. This roll is very artistic in appearance and is wrapped in Cellophane, thus making it dust proof and sanitary.

All of the "National" brands of toilet tissue and paper towels for the western trade are manufactured at the Camas, Wash., mill of the Crown Williamette Paper Company, an affiliated company. This mill is conceded to be the largest specialty paper mill in the world.

Indianapolis Paper Market Quiet

INDIANAPOLIS, Ind. August 27, 1931.—Little improvement is seen in most lines of the paper industry during the past week. In the fine paper demand there has been some increase from the retailers, who are getting ready for the opening of the schools next month, but other buyers of fine papers appear to be hedging close to shore in their purchases. Prices seem fairly well stabilized, which means about as low as possible. Most of the local jobbers are exerting more sales effort now than they ever have before and likely will exert some more before fall.

Cooler weather during the past two weeks, coupled with rains most of the time, has cut into the demand for summer specialties. Such items as napkins, containers, plates dishes and other similar items have slumped in demand, due mostly to weather conditions. The demand for paper containers from the ice cream trade also has suffered.

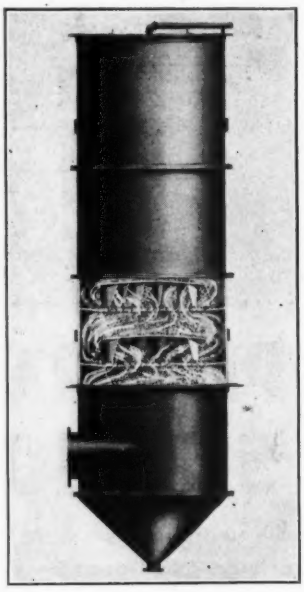
Wrapping papers also are going through a very dull season. The entire summer has been off, even more than in other paper lines and little increase is expected until fall comes nearer. The opening of the school and college season is expected to aid wrappers somewhat. Kraft seems in only fair demand, but prices seem fairly firm.

Waxed papers and cellophane seem to be having the best business just now. The makers of candy bars are perhaps the best buyers just now for cellophane. The cigar manufacturers in this state are buying very sparingly due to lack of business. Stocks on hand are very light, however, and any increase in cigar manufacture would mean an almost immediate favorable reaction on demand for cellophanes. Bread wrappers continue good, with prospects for improvement once people get back from their vacations.

Demand for building paper is about over and the season has been one of the dullest in years.

Wet Type Dust Collector

Claude Schneible, 35 East Wacker Drive, Chicago, has recently placed on the market a new wet type dust collector of exclusive, patented design and with many new operating features. The new Multi-wash Dust Collector has been simplified to eliminate all moving parts, spray nozzles, pockets and dead zones.



Dust laden air, vapors, gases or other products to be cleaned or recovered are introduced at the bottom of the tower and at a tangent to the periphery. Water or other liquid cleaning or absorbing media introduced at the top of the tower falls in a spray through succeeding plates of the tower, giving an intense, intimate contact with the upward moving air or vapor which has continued to spiral in its course due to the vanes in each plate. There are two washes per plate and standard equipment provides six plates or twelve washes.

This equipment is capable of handling air saturated with moisture and hot gases or fumes. The cleaning action is illustrated by the cut-away view—clean air escapes from the top of the tower and can be returned into the plant or exhausted into the atmosphere.

Multi-wash Dust Collectors are particularly adapted to use in plants where dust falling outside becomes an evil and for use with ashes conveying systems collecting dry feed materials, cement, coal dust or wherever usable vapors or any valuable materials held in suspension should be recovered to prevent costly losses.

Multi-wash Collectors can be built of steel, aluminum, copper, wood, enameled cast iron, monel metal or to suit any condition.

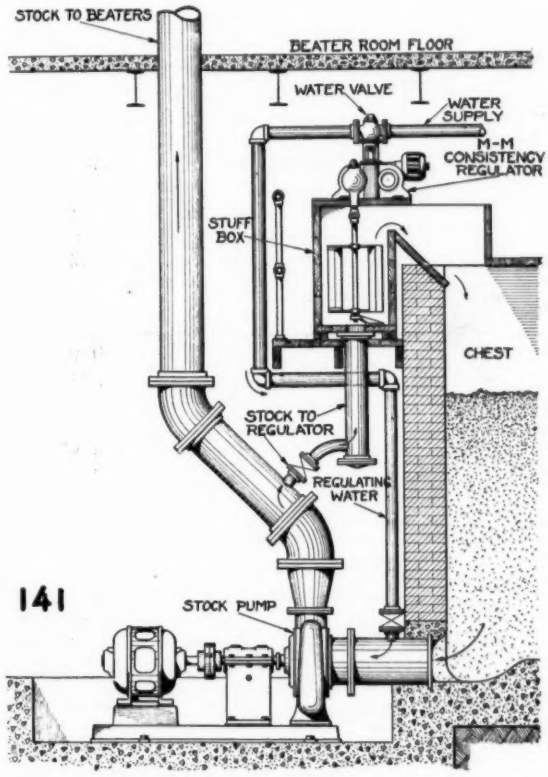
A KNOTTY PROBLEM
In Stock Consistency Regulation

THE PARKER-YOUNG CO.
LINCOLN, N. H.

FIND THE SOLUTION IN THE M & M REGULATOR

This well known company is a large producer of sulphite and groundwood products, producing each of these raw materials at their own plant for subsequent use in paper making.

Their problem was to obtain uniformity of stock density prior to the beaters so that the beating process, and the non-fibrous paper making materials, could be made very uniform. Another important phase lay in the accounting end of the control, an activity which can



be carried out only if quantities are held uniform by a reliably automatic means.

The installation presented a knotty problem, in that a large volume of stock had to be regulated in a very short time, due to intermittent operation. Regulation had to be maintained within the guaranteed limits and operating reliability was of course, absolutely necessary.

Their slush stock distributing system was already installed and consisted of an 8" centrifugal pump in the basement, operated by push button control from the beater room. The capacity of the pump is about 800 G.P.M. A header runs the entire length of the beaterroom with a branch to each beater. When stock is wanted, the beaterman starts the pump motor; stock flows from the chest into the pump, which propels it to the beater. When the proper amount of stock is in the tub, the pump is stopped. This type of operation means that the pumping period may be from a half minute up to not more than four or five minutes.

A standard Meyers-Mesco Consistency Regulator was installed on the raw sulphite system first.

Referring to the cut, a 3" sampling line was taken from the pump discharge line close to the pump. This extracts about 90 dry lbs. per minute from the pump discharge and conveys it to the sampling box in which is located the agitating element of the Regulator. This stock then overflows directly into the chest from the sampling box.

Water for regulation under control of the regulator passes through the water valve, thence into the pump suction connection. The pump effectively mixes the water and stock which then passes to the beaters as shown.

As the pumping periods are intermittent, the regulator motor is connected in parallel with the pump motor and operates simultaneously with it. Therefore, the regulator operates only while the pump is running.

An inherent characteristic, which makes this regulator of great assistance to centrifugal pump operation, particularly as regards starting with heavy stock, lies in the fact that with intermittent operation; at the instant of starting, the regulator valve opens wide for 4 or 5 seconds, then immediately closes down to the proper position for steady regulation. This affords a quick and healthy flushing of the suction line, pump casing and discharge line resulting in a great reduction of starting power and mechanical punishment at that time. As the same thing to the same degree occurs at every start, regulating accuracy during each pumping period is not affected.

For this intermittent type of service, the regulator is equipped with oil dash pots which effectively steady the water valve movements. Without them, there is a tendency for the regulator to hunt, but as the pumping period is so short, this cannot be allowed. The dash pots are eminently successful in obviating any hunting tendencies and allowing the device to do its best work without delay. In this unusually hard service, regulation must be established within a few seconds after starting and must cease by full valve closure instantly upon shutting down the pump.

The entirely successful accomplishment of this difficult regulating job, was manifested by this firm's purchase of another regulator to work under identical conditions on their groundwood stock. Both are now doing a good job every day, delivering slush stocks to the beater room at a density uniformity under the guaranteed limits.

Their first machine, for sulphite regulation was placed in service in August 1930 and the second machine for groundwood was placed in service in November 1930.

SALIENT FEATURES CONCERNING THE PARKER-YOUNG INSTALLATION

1—Handling up to 5.75% raw unbleached sulphite.
2—Regulating batch consistency in intermittent operation within .15% of an average density.
3—Instantly thrown in and out of action.
4—No maintenance expense by its owners to date.
5—Proven reliability and accuracy.
6—Negligible hunting due to intermittent operation.
7—Improved starting conditions at pump.
8—Constant running conditions at pump.
9—Control of stock for processing and accounting greatly facilitated.
10—Will do the same thing in any mill with any stock.

MERRITT
Engineering & Sales Co., Inc.
Lockport, New York, U.S.A.

Obituary

Charles Riordon

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., August 26, 1931.—Charles Riordon, retired pioneer pulp and paper manufacturer, died at his home here during the week, following an attack of pneumonia. Born in Ireland in 1847, he came to Canada with his family in 1850, living for a time at Weston, Ont., and then at Rochester, N. Y., where he was educated.

He returned to Canada in 1863, at the age of fifteen, and joined his brother, John Riordon, in building a paper mill at Merritton, Ont., becoming manager in the following year at the age of sixteen, and in 1866, at eighteen, he went alone to England and brought back machinery for a new mill.

In 1869 he introduced ground-wood pulp into Canada and in 1885 went to Austria and Germany, to study their methods of producing sulphite pulp, bringing back from the latter country two digesters which were floated down the Rhine, and, being too large to go into any cargo boat, were brought to Canada in sailing ships, from which the decks had been removed and then replaced.

The first sulphite pulp was made in 1887 in Merritton and Cornwall. The Hawkesbury mill was built in 1898 and in 1910 the Riordon company took in the G. H. Perley Company. The Kipawa mill, together with the town, was built in 1917-18. In 1920 the company gathered together the principal properties on the Gatineau, enabling them to be developed as a unit, by which time the company had assumed large proportions.

In 1877 the Toronto *Daily Mail* was bought, and Mr. Riordon remained its president until its sale in 1927. Mr. Riordon was instrumental in building two railways, the "Temscouata" from Riviere du Loup to Edmundston, and the "International" in New Brunswick, also in rebuilding the Niagara Falls Suspension Bridge, of which company he was for some time the president, and a director for nearly fifty years. He had lived in Montreal for the past ten years.

He is survived by one son, Charles Christopher (Carl), and three daughters, Mrs. S. B. Pemberton, of Montreal, Mrs. G. W. Crompton, of "Broomfield", Morley, Derby, England, and Lady Goold-Adams, of London, England. Mrs. Riordon died a little more than a year ago. Interment took place in Toronto.

E. S. Sheperd

E. S. Sheperd, general superintendent of the Stewart Inso Board Corporation, St. Joseph, Mo., died August 21 as a result of injuries sustained in an automobile accident near Fulton, Mo., August 18. The car in which Mr. Sheperd was returning from an Eastern business trip skidded and turned over during a heavy rainstorm.

Mr. Sheperd was one of the best known and best informed men in the straw pulp industry. As a boy he learned paper making in his father's mill at Piqua, Ohio. As a young man he and a brother established and built the Vincennes Straw Board Mill in Vincennes, Ind. They operated the mill for a number of years, later selling to the American Paper Board Company.

In 1911, Mr. Sheperd went to Hutchinson, Kansas, where he organized and helped supervise the construction of the Western Straw Board Mill, now the property of the Emerson Carey Fibre Products Company. In 1927, he assisted in the organization and erection of the mill of the Stewart Inso Board Corporation.

His brother, A. M. Sheperd, general manager of the Tennessee Paper Mills, Chattanooga, Tenn., died early this year. Burial of Mr. Sheperd was in Vincennes, Ind., August 24.

Stephen P. Bumpus

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., August 27, 1931.—Stephen P. Bumpus, salesman for Storrs & Bement Company, paper merchants, 282 Congress street, died August 17 at the Malden Hospital, Malden, Mass. Mr. Bumpus was born at Auburn, Me., in 1869. He was employed by Storrs & Bement Company in January, 1897, as a stock man and later became one of their leading salesmen, completing thirty-four years of faithful service. He was formerly with C. H. Robinson & Co., paper dealers, Portland, Me. His passing will be deeply regretted by his many friends, associates and customers, with whom he came in contact during his years of service. The funeral services, held at his late residence, 54 Bucknam street, Everett, Mass., August 20, were attended by a number of the trade.

M. J. McNulty

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., August 27, 1931.—M. J. McNulty, the founder and chairman of the board of the McNulty Paper and Twine Corporation, 535 West Chicago Avenue, Chicago, passed away Thursday morning, August 13, at 10 a.m., after a long siege of heart trouble.

Mr. McNulty was born in County Mayo, Ireland, November 14, 1857, and sailed with other members of his family to this country from Cork, Ireland, March 17, 1869. More than sixty years of his life was spent as a resident of Chicago.

Surviving him is a daughter, Mrs. Marion J. Grayson; three sons, W. Philip McNulty and twin brothers, James F. and Michael A.; a sister, Mrs. Jane Kiely, all of Chicago, and a brother, Anthony McNulty, of Fort Dodge, Iowa.

Solemn high mass was celebrated at St. Mary's of the Lake Church, Sheridan Road, at Buena Avenue; interment at All Saints Cemetery.

Harry Freed

[FROM OUR REGULAR CORPESPONDENT]

MONTREAL, Que., August 27, 1931.—Harry Freed, president and founder of the Freed Paper Box Company, Montreal, died suddenly in his office here during the week. He was in his 46th year. He is survived by his widow, formerly Florence Goldstein; one son, Hyman and two daughters Mildred and Beryl.

Nicholas Kelsch

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., August 27, 1931.—Nicholas Kelsch, for forty-two years a gilder for John Carter & Co., Inc., making gold-bevelled cards, died recently. He leaves a widow and several children.

Simplex Paper Co. To Build

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., August 31, 1931.—The Simplex Paper Company, of Adrian, is erecting a $15,000 addition to its plant at Palmyra. The new structure will house equipment for the manufacture of straw paper, now purchased by this concern. According to reports this concern now employs 65 men at Palmyra and 120 at Adrian. Plants are operating on a 24-hour schedule.

Only Goodrich can make Vulcalock rolls. *For Vulcalock is an exclusive Goodrich development.* A process that makes it possible to vulcanize soft rubber directly to a metal core, with no "dead" hard rubber base. The bond between the soft rubber and the metal becomes practically as strong as the rubber itself.

You can use this Soft Rubber Cover closer to the Core

SOFT RUBBER . . . "live" cushioning . . . from outer surface to metal core.

That, in a nutshell, is the Goodrich Vulcalock couch roll.

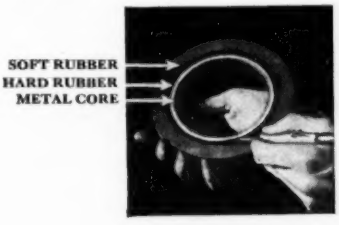
To gauge accurately its greater efficiency, its more marked economy, contrast it with the ordinary rubber roll with its base of hard rubber.

Sheer waste, of course, this foundation of "dead" rubber. It steals resiliency. And it shortens the life of the roll.

The Goodrich Vulcalock roll, on the other hand, not only gives more working cushion, weight for weight and diameter for diameter . . . but it retains its resilience, its cushioning effect, until it is worn down just as close to the metal itself as to the hard rubber layer in the ordinary roll.

Vulcalock couch rolls run truer. Give a fuller contact against the cylinder mold. They pick up the sheet more efficiently and take out more water. Endowed with greater toughness, greatly increased resistance to wear, they long outlast every other type.

An interesting story, this development of the Vulcalock process for covering paper mill rolls. The details as affecting worm rolls, felt rolls, and press rolls, as well as couch rolls, are outlined in literature available upon request. Address The B. F. Goodrich Rubber Company, Inc., (Est. 1870) Akron, Ohio.



The Old-Type Roll. Note the "dead" hard rubber base between the soft cushion and the metal core. Eliminating this hard rubber foundation, Vulcalock Couch Rolls provide more working cushion for a given thickness than you get in any other type.

VULCALOCK *Paper Mill* ROLLS

Another B. F. Goodrich *Product*

Couch Rolls · Press Rolls · Table Rolls · Wire-Carrying Rolls · Felt-Carrying Rolls, Both Plain and Wormed · Wringer and Squeeze Rolls

Canada Power Reorganization

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., September 1, 1931.—Preparations for calling the varied meetings of Canada Power and Paper security holders are progressing satisfactorily and notices concerning these gatherings will shortly go forward—possibly within the current week. Meanwhile, deposits of securities with the Protective Committee continue to mount. The latest return covering the period up to Wednesday, August 26, showed the following totals: Bonds to the par value of $37,977,065, or 88.7 per cent.; debentures, $30,289,950, or 85.4 per cent.; preferred stock, $20,124,700, or 83.7 per cent, while deposits of common stock totalled 1,229,699 n.p.v. shares, or 87.1 per cent of the amount outstanding. Yesterday the already twice-extended time for depositing securities expired.

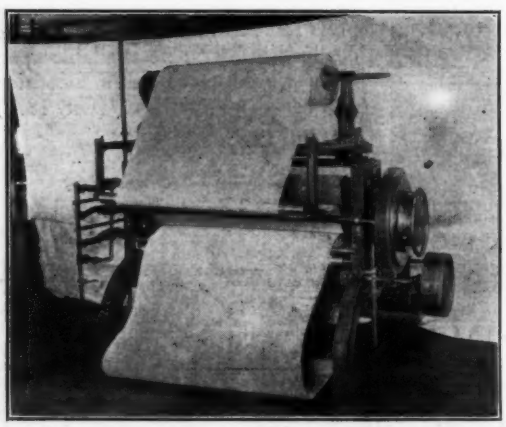
In accordance with the terms of the plan announced by the Protective Committee of Canada Power and Paper Corporation, Angle-Canadian Paper Mills, Ltd., has reverted to its former position as a separate company, and its officials retain position prior to the merger. Canadian Power acquired the 135,000 common shares of Anglo-Canadian in June, 1930, and issued 2¼ shares of its own common stock in exchange for one share of Anglo-Canadian. The original shares have now been returned to the Rothermere organization. The contract with Anglo-Canadian called for a guarantee by Canada Power of £3,000,000, 6½ per cent first mortgage bonds, together with the preferred dividend of Anglo-Canadian. The bonds were also guaranteed unconditionally by Daily Mirror, Pictorial Newspapers, Ltd., London, and Sunday Pictorial Newspapers (1920) Ltd., London.

Anglo-Canadian held to contract with the Hearst interests for the supply of 120,000 tons of news print annually, and it is understood that it will retain this contract. It also has a 25,000 ton contract with the Hearst papers in England. Together these two contracts represent a tonnage only 500 tons short of the annual capacity of the Anglo-Canadian mills of 500 tons per day for 300 working days a year.

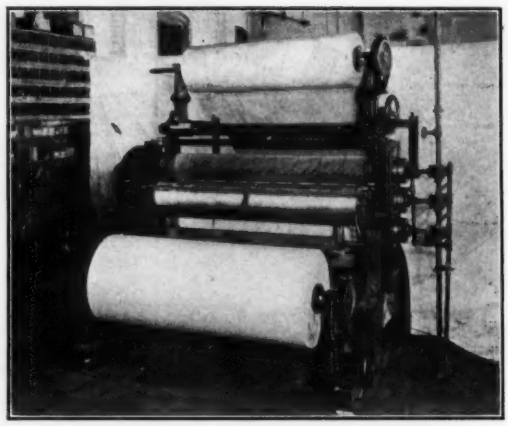
Corrugating Board Diagonally

Ever since corrugated paper and fiber board became so popular in the manufacture of cartons and boxes, for shipping and storage, there has been a feeling among the industry that if the corrugations could be made to run diagonally across the sheet instead of straight across, a much stronger carton or box would result.

Innumerable trials have been made to accomplish this, but for one reason or another results have not heretofore been satisfactory and it has not been possible to produce efficiently the board with diagonal corrugations.



FRONT VIEW



REAR VIEW.

A new machine has recently been perfected by F. H. and C. L. Tumulty of Anderson, Ind., who have had years of experience with various manufacturers of corrugated fibre board.

The machine has been perfected and patented by the Pierce Governor Company of Anderson, Ind. The machine as designed produces single faced, diagonally corrugated board, but with the addition of another unit can produce double faced board just the same as it is produced on the conventional machines which produce straight corrugated board.

It is claimed that the entire operation is easier and that the machine requires less setup time than machines now used for producing straight corrugations. In addition, more feet per minute can be run than with the conventional types of corrugaters now in use.

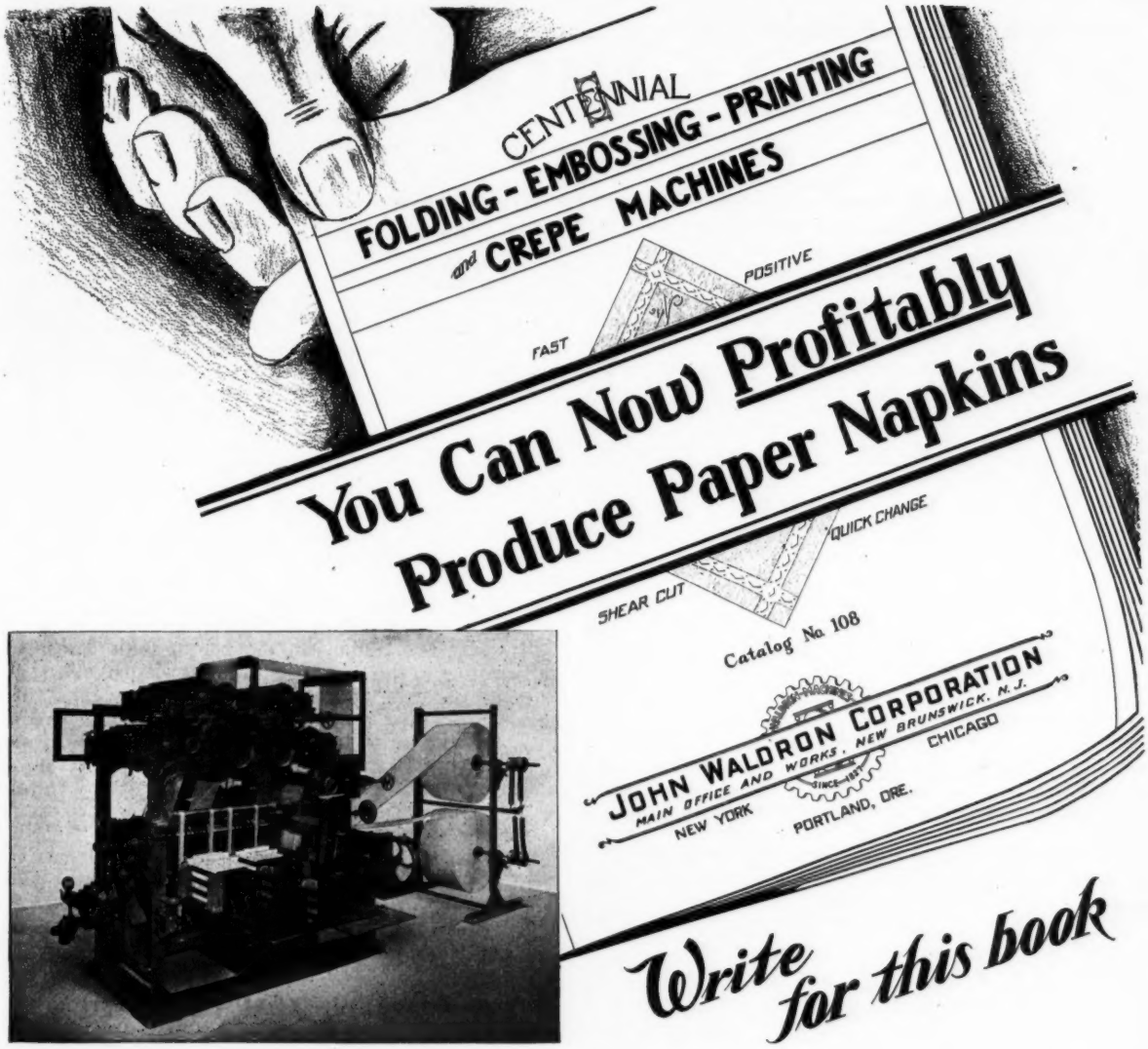
Board with the diagonal corrugations can be produced in practically any width. It comes from the machine with comparatively clean edges and requires a minimum trim. Samples of the finished product that have been inspected reveal the fact that the corrugations are perfect in every detail.

Using the diagonally corrugated board for making cartons and boxes adds considerable strength, inasmuch as all scores fall across corrugations rather than running parallel with corrugations. Corners are supported by 9 to 10 corrugations to the foot, and the corrugations on opposite sides run in opposite directions.

In making double wall board, the corrugations crisscross, making a diamond shaped space between the corrugations. The criss-crossing of the corrugations in the double wall board produces a board of tremendous strength and increases the possibilities for using corrugated boxes for shipping heavy, or breakable products.

Extends Corporate Certificate

TICONDEROGA, N. Y., August 31, 1931.—A certificate filed this week by the Ticonderoga Pulp and Paper Company with the Secretary of State extends the existence of that corporation to perpetuity. The company was originally incorporated in 1882 for a period of 50 years and when formed had a capital stock of $80,000 consisting of 800 shares of stock with a par value of $100 each. Among the directors at its organiaztion were Clayton H. Delaus, S. R. Wagg, A. B. Walds, W. H. Wright, T. A. Hammond, J. C. Jennings, M. C. Rice, C. E. Bush, and J. T. Onterson.



The development of this new machine completely fulfills the need for maximum production at minimum cost and opens up new profitable opportunities for progressive manufacturers and converters of paper.

Embossing, printing from one to three colors, folding, counting—all operations in sequence—on 500 napkins per minute—sheer cut, quality products. Complete description of machine and method in this new book. Write for your copy.

JOHN WALDRON CORPORATION

MAIN OFFICE AND WORKS—NEW BRUNSWICK, N. J.

NEW YORK
122 East 42nd St.

CHICAGO
201 N. Wells Street

PORTLAND, ORE.
311 Lewis Bldg.

WALDRON

Paper Converting Machinery

New York Trade Jottings

Walter Hicks, of Daniel M. Hicks, Inc., dealers in paper mill supplies, of 200 Fifth Avenue, New York, is enjoying a hard earned vacation at his summer home on Shelter Island, N. Y.

* * *

The Monsanto Chemical Works, of St. Louis, Mo., with New York offices at 10 East 40th street, has raised the wages of its workers 10 per cent, with the view of retaining higher type labor when business improves.

* * *

A. E. Dubey, recently with the Frank L. Scott Company, has joined the sales force of Larson & Dubey, Inc., importers of paper, jute goods and burlap, of 40 Worth street, New York. His activities will continue in developing special papers for the converting trade.

* * *

Warren B. Bullock, manager of the Import Committee of the American Paper Industry, with headquarters at 15 William street, New York, has returned to duty after spending an enjoyable vacation in Minnesota and Northern Wisconsin.

* * *

All customs offices in New York, including the Custom House, the United States Appraiser's Stores, and the offices and trial rooms of the United States Customs Court, will be closed next Monday, September 7, Labor Day, but will remain open on Saturday, September 5, until noon, as usual.

Oppose Freight Increase on Coast

PORTLAND, Ore., August 27, 1931.—Pulp and paper interests in the Pacific Northwest were vitally interested in the sessions of the regional interstate commerce commission hearing which was held in Portland for four days this month to discuss the proposed 15 per cent blanket schedule increase in freight rates as requested by the railroads.

Among the speakers against the rate increase was O. M. Allison, secretary of the Spaulding Pulp and Paper company, Newberg, Ore. Mr. Allison declared that if this rate became effective the plant of the company would have to shut down.

Present freight rates, he testified, equal 40 per cent of the price of pulp at the mill, costing the Spaulding company $10 a ton to reach the Chicago market where European and Canadian mills reach the same market at a cost of $6 to $8. "We are now selling our product at cost," he said, and added that the company was now trying out the all-water route, making the haul down the Willamette river, through the Panama canal, and thence up the Mississippi to reach the Ohio market.

The highway commission sent their attorney, J. M. Devers, to testify before the hearing and he made the point that if this rate increase should materialize, the freight would be diverted from the railroads to truck lines, thus increasing highway maintenance for the people.

Cornstalk Products Bid Too Low

The sale of the properties of the Cornstalk Products Company, Inc., manufacturers of bleached chemical pulp, etc., of Danville, Ill., was held on August 10, as scheduled, but the bid was not deemed sufficient by the Court. Another sale will probably be ordered at a later date. F. E. Butcher and Clint C. Tilton are the co-receivers.

Paper Exhibit at Chicago

Jesse H. Neal, general manager of the American Paper and Pulp Association has sent the following notice to members:—"We have been invited by the officials of this 'Century of Progress,' International Exposition to participate as an industry in demonstrating the progress in paper making during the past 100 years.

"The plan is for the industry to install a central, dynamic exhibit in one of the buildings and manufacture paper, using a 22-inch machine operating 75 feet per minute on a 34 lb. basis sheet, making about 400 lbs. of paper daily. The proposal includes also the making of hand-made paper, the showing of raw materials, chemical processes, graphic exhibit of the history of paper making, charts, control instruments, grades and uses of paper, etc.

"This involves on the part of the industry, the rental by individual companies of at least sixteen 20 x 20 exhibit booths surrounding the central institutional exhibit at $4,000 each for the duration of the show. If the machinery and materials for the central exhibit are donated the general over-head cost for labor, power, water, supervision, etc., would be about $25,000. If they are not donated, the cost would be proportionately higher.

"Each individual exhibitor would have to install his own display and assume the cost of the necessary attendants during the show which would continue for five months, in addition to the cost of the space.

"If there are a sufficient number of mills desirous of participating in this exposition the Association will be glad to make the arrangements, but unless there are at least sixteen mills that are willing to contract for space this year, the exposition authorities will not set aside space for the institutional exhibit. If there is no chance of your company being interested there is no need of any response to this letter. If you are interested however, please let us know at once.

"The exposition will occupy about three miles of lake front including an island. It is soundly financed and construction work is going forward at the present time. It is a tremendous undertaking, but the officials are confident of its completion according to schedule."

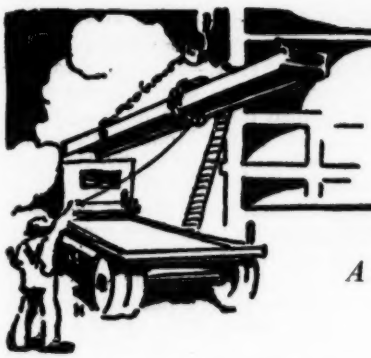
Sodium Sulphate Plant to Start

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Ore., August 29, 1931.—Indication that a 100-ton sodium sulphate plant will be started immediately at Monse in Okanogan county, Wash., for the Pacific States Pulp and Paper company as part of the pulp and paper mill to be built at Priest River, Idaho, was strengthened late last month when R. R. Black arrived in Spokane to be in charge of the construction, according to press reports and news from other interested sources.

C. W. Beardmore who has been in the East securing financial assistance for the plan is arriving soon at which time more information is expected to be forthcoming. The sulphate plant would be one unit of a million dollar pulp and paper project at Priest River, Idaho, which has been anticipated ever since the company was incorporated months ago.

Complete development plans include construction of a 100-ton kraft mill at Priest River and a 100-ton sale cake plant at Monse. The wood of eastern Washington is said to grow slowly and to have the tough fiber so essential to good kraft products, as well as yielding more pounds per cord than in districts where it grows more rapidly. Although recent devastating fires have swept through Idaho forests, the timber owned by this company is said not to have been reached.



CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Nutley, N. J.—George LaMonte & Son, Kingsland road, manufacturer of safety papers, etc., has completed plans and awarded a general contract to the John W. Ferguson Company, 152 Market street, Paterson, N. J., for proposed new additions to its plant. Work will consist of a main two-story wing, 45 x 60 feet; one-story unit, 30 x 100 feet; and a second story addition to a present one-story building. The entire program will be placed under way at once and is reported to cost over $75,000. New units will be used largely for general operating service. Jardine, Murdock & Wright, 347 Madison avenue, New York, are architects.

Fulton, N. Y.—The Velvet Tissue Products Company, Inc., recently organized with a capital of $50,000 and 500 shares of stock, no par value, has concluded negotiations for the acquisition of the former plant of the Arrowhead Mills, Inc., at Granby Center, near Fulton, and will take over the property at once. The mill has been idle for a number of months and the new company will carry out an improvement program, with installation of equipment for the manufacture of soft tissue papers and kindred paper stocks. It is proposed to have the unit ready for service at an early date. The new company is headed by William J. Hartnett, 258 North Fourth street, Fulton; Richard F. Baker, 306 Academy street, Fulton; and Lawrence Sochia, Carthage, N. Y. It is understood that George C. Hodgson, president of the Great Lakes Forge Company, 1220 West 119th street, Chicago, Ill., is interested in the new organization, and will be a director.

Wellsburg, W. Va.—The Harvey Paper Mills Company, Wellsburg, a subsidiary of the Pillsbury Flour Mills, Metropolitan Life Building, Minneapolis, Minn., has asked bids on general contract for the construction of a new addition to its local rope paper mills, used for production of heavy bag stocks for parent organization. The new unit will be two-story, brick and steel type, about 35 x 70 feet, and is reported to cost close to $40,000, with equipment. It is expected to place superstructure in progress in September.

New York, N. Y.—The Industrial Container Corporation, care of Hellinger & Reichart, 305 Broadway, attorneys, recently organized with a capacity of $125,000, is said to be arranging the early operation of a local plant for the manufacture of paper and fibre containers of various kinds. The names of company officials are temporarily withheld.

Hamilton, Ohio—The Champion Coated Paper Company, Hamilton, has filed plans for alterations and improvements in its mill unit on North B street, and will place work under way at once. Estimated cost has not been announced.

Trenton, Mich.—The Aetna Paper Company, Dayton, Ohio, is said to have negotiations under way for the purchase of certain machinery at the plant of the Storey Parchment Company, Trenton, which has been idle for a number of months past. It is understood that the Aetna company will use the equipment for proposed expansion.

Newark, N. J.—The one-story storage and distributing plant at 780-96 Frelinghuysen avenue, constructed and occupied by the Kelly Paper Company for a number of years, has been leased by Patrick J. Kelly to Roessler-Sterling, Inc., Newark, and will be used for another line of service.

Marion, Ind.—George Weston, head of the Weston Paper and Manufacturing Company, Dayton, Ohio, has acquired the plant and property of the Bedell Manufacturing Company, Marion, Ind., at a receiver's sale for a consideration of $31,000. The plant heretofore has been used for the manufacture of furniture. It is reported that the new owner proposes to use the property in connection with the business of Weston Paper company, for increased operations.

Menasha, Wis.—The Marathon Paper Mills Company, Menasha, has awarded a general contract to the Fluor Brothers Construction Company, 48 Otter street, Oshkosh, Wis., for the construction of a new addition to local plant, consisting of a one-story unit, aggregating about 15,000 square feet of floor space, to be used primarily for storage and distributing service. It is reported to cost about $18,000.

Atlanta, Ga.—The Georgia Forestry Association, Atlanta, T. Guy Woolford, president, in cooperation with the recently created State Department of Forestry and Geological Development of Georgia, Atlanta, is arranging plans for the construction of a new pine pulp paper mill for experimental work in connection with the manufacture of news print from that material. A site will be selected at an early date, and it is proposed to have the mill ready for service shortly after the New Year. Georgia slash pine will be used primarily for raw material supply. A fund of $70,000 has been secured for the plant, of which amount $50,000 has been contributed by the Chemical Foundation, Inc., 654 Madison avenue, New York.

Menasha, Wis.—The Menasha Products Corporation, Menasha, manufacturer of paper specialties, has preliminary plans under way for the construction of a new one-story, L-shaped addition, approximating 16,000 square feet of floor space to be used for storage and distributing service. It will be located on River street, and is reported to cost in excess of $15,000.

Sundsvall, Sweden—The Kreuger & Toll Company, Stockholm, Sweden, operating pulp and paper mills, has work under way on a new pulp mill at Ostrand, near Sundsvall, designed as the largest unit of its kind in the world. The plant will consist of several buildings and will

be equipped for an initial capacity of about 100,000 tons per annum. It is estimated to cost over $800,000, with machinery.

Providence, R. I.—The Cellophane Cover Company, Providence, recently organized by Joseph E. Adelson, Providence, and associates, with capital of $10,000, plans operation of a local paper converting plant, primarily for cellophane specialties. Charles M. and Maurice Robinson, Providence, are interested in the new company.

Panama City, Fla.—The Southern Kraft Corporation, Panama City, a subsidiary of the International Paper Company, 100 East 42nd street, New York, has work under way on a new storage and distributing unit, aggregating about 60,000 square feet of floor space, reported to cost over $75,000, with equipment. Another similar building will be built at an early date, totaling close to 30,000 square feet of floor space.

North Wilbraham, Mass.—The Collins Manufacturing Company, Suffolk street, Holyoke, Mass., is said to have completed plans for proposed new paper plant at mill at North Wilbraham, to cost close to $50,000, with equipment, and will proceed with superstructure at an early date. McClintock & Craig, 458 Bridge street, Springfield, Mass., are architects and engineers.

New York, N. Y.—Frank A. Fornabio, Inc., has been organized by Frank A. Fornabio, and associates, care of William S. Klinger, 2 Lafayette street, New York, attorney, to manufacture and deal in paper goods. The company is capitalized at $10,000, and proposes to begin operations at an early date.

Elizabeth, La.—The Calcasieu Sulphate Paper Company, Elizabeth, manufacturer of kraft papers and kindred heavy paper stocks, has begun the construction of a new one-story addition to its mill, to be equipped as a finishing department. It is reported to cost over $35,000, and is scheduled to be ready for service next month. R. M. Hallowell is president; C. L. Glasgow is superintendent.

Brooklyn, N. S.—The Mersey Paper Company, Ltd., Liverpool, N. S., is holding close to capacity schedule at its local news print mill, giving employment to regular working quota, and expects to hold to this basis for an indefinite period.

New Companies, Etc.

Chicago, Ill.—The Apex Paper Stock Corporation, 1344 North Western avenue, has been incorporated with a nominal capital of $2,500, to deal in paper products of various kinds. Incorporators are S. Yale Fischman, and Mandel Elman.

Philadelphia, Pa.—Acorn Paper and Twine Company has been incorporated with a capital of 50 shares of stock, no par value, to deal in paper products of various kinds, including paper bags and paper boxes. Harry A. Rutenberg, 422 South Broad street, Philadelphia, is one of the incorporators.

Dallas, Tex.—The Equality Paper Box Company, Dallas, has arranged for an increase in capital from $20,000 to $30,000, for general expansion.

Milwaukee, Wis.—Blatz Paper Company has been organized by local interests to deal in paper goods of various kinds. The company will be represented by Charles C. Erasmus, 152 West Wisconsin avenue, Milwaukee, attorney.

Providence, R. I.—The Union Paper Company, Providence, has filed notice of increase in capital from 1250 shares of stock to 1350 shares of stock, no par value, for general expansion.

Now Mohawk Paper Mills Inc.

[FROM OUR REGULAR CORRESPONDENT]

COHOES, N. Y., August 31, 1931.—A reorganization of the Mohawk Papermakers Inc. has been effected and incorporation articles were filed this week to show that the new concern will do business as the Mohawk Paper Mills Inc. The company was recently acquired by William R. Breslin, prominent manufacturer and business man, at a sale held in Albany, it being understood that he represented a group interested in the property. The new concern plans to continue operation of plants in this city and Waterford.

The incorporation articles state that the new concern has been formed to manufacture wood pulp and paper and for the development of woodlands. The capital stock consists of five hundred shares of preferred stock with $100 par value each and five hundred shares of common stock having no par value. The directors are Daniel J. Halpin, George F. Morrison, Edna W. Stokes, George E. O'Connor and J. Ormand Grady, all of Waterford.

ITHACA, N. Y., August 29, 1931.—In an address at Cornell University by Raphael Zon, director of the experimental station university farm at St. Paul, Minn., he declared that the present rate of reforesting the 80,000,000 acres in this country will require several hundred years for completion. "Not only are we not getting ahead in reclaiming denuded lands," he said, "but we are actually losing ground in the face of continued forest devastation. Yet to some extent this is an inevitable process. Nature has not placed the forests where they are most needed in every case. Some of the virgin forests of the Pacific Coast must give way to industrial development. On the other hand, new forests must be created where they once were but now are not or where they were not but now should be."

Fenimore Mill Demolishes Tower

[FROM OUR REGULAR CORRESPONDENT]

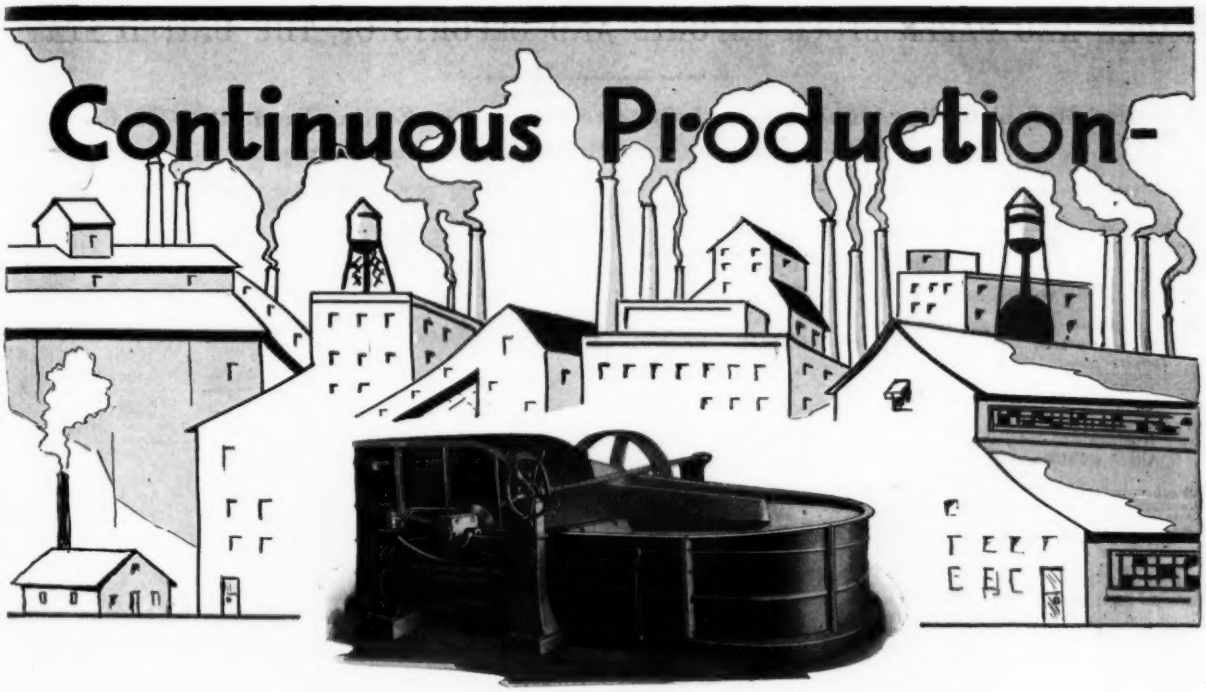
HUDSON FALLS, N. Y., August 31, 1931.—It is expected that the task of demolishing the tower at the Fenimore plant of the Union Bag and Paper Corporation will be completed this week. The work has been under way for several weeks past under the supervision of a Glens Falls contracting firm and much of the material has already been removed. A charge of dynamite was placed under the remaining portion early this week to hasten the work along.

It was learned that virtually all of the salvaged material can be used again and it is understood that the several million bricks taken from the structure will find a ready market. The structure has been removed in sections and the dynamiting job was performed in a manner to prevent bricks flying outside. The tower has not been used since the manufacture of pulp was discontinued a few years ago which was largely instrumental for the decision to demolish it.

I. P. Holds Conference at Fort Edward

[FROM OUR REGULAR CORRESPONDENT]

FORT EDWARD, N. Y., August 29, 1931.—The initial gathering of a series of conferences to be held in the various plants of the International Paper Company was held last week in this village. Among those attending were mill managers and superintendents from numerous places while discussion of interest relative to operation of plants was the main subject. Similar conferences in the past were held at the New York office but it is said that plans now call for future gatherings to be held at the different branches controlled by the company.



* Run five days instead of Three

Why didn't you operate 100% last year? Couldn't you have sold more paper if it had been better quality? If you could improve the quality of your paper, couldn't you get more business?

Why not make better paper, get more business and run the mill five days instead of three?

Make the paper in your Beaters and install more and better Beaters.

Let us make a survey of your Beater Room and submit a report with suggestions. No obligation will be incurred.

SEND THE COUPON TO

DILTS MACHINE WORKS, Inc.
Fulton, New York
Gentlemen: Without obligating ourselves, we would like to discuss with your representatives, certain details pertaining to our Beater Room.

Company Name .....

Address ..... By .....

— Dilts —
MACHINE WORKS Inc. FULTON, N.Y.
"Your Paper Is Made In Your Beaters"

* This series of advertisements is reprinted by request as being the most timely and appropriate in the industry.

PAPER AND PAPER STOCK IMPORTS AND EXPORTS OF THE UNITED STATES

For the Month Ending June 30, and for the Six Months Ending June 30, 1931 Compared with Corresponding Month of Previous Year

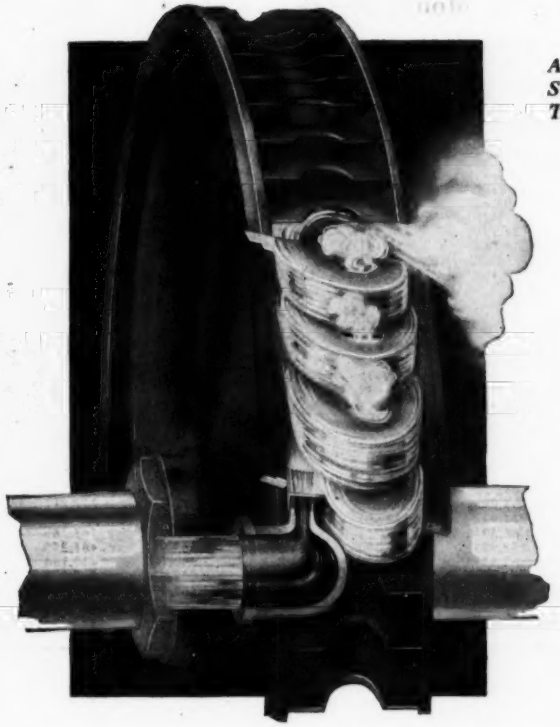
IMPORTS—PAPER

	June				Six Months Ending June 30			
	1930		1931		1930		1931	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
PAPER AND MANUFACTURES	.....	$13,283,479	.....	$11,364,917	.....	$75,342,910	.....	$66,095,703
Printing paper—								
Standard news print ....lbs...free	413,853,311	11,942,008	377,837,538	10,287,889	2,281,626,781	66,431,539	2,099,841,544	58,336,155
Imports from:								
Finland ....lbs.	7,341,773	170,686	9,335,519	203,146	46,138,059	1,066,198	44,973,619	1,024,242
Germany ....lbs.	1,848,399	42,566	3,093,278	65,267	11,749,317	284,770	21,981,870	475,244
Norway ....lbs.	758,692	19,904	959,029	24,089	7,998,763	192,184	18,238,379	464,577
Sweden ....lbs.	9,260,639	231,071	20,879,484	489,480	70,803,524	1,751,366	69,909,640	1,617,483
Canada ....lbs.	345,699,001	10,095,006	313,420,018	8,665,160	2,026,993,331	59,786,317	1,822,624,129	51,437,286
Newfoundland and Labrador....lbs.	48,944,807	1,382,775	30,150,210	840,747	117,943,787	3,350,704	122,043,935	3,315,593
Other countries ....lbs.	.....	.....	.....	.....	.....	.....	69,972	1,730
All other, n. e. s....lbs...dut.	142,848	8,052	268,034	11,917	1,343,497	64,469	1,276,671	45,841
Greaseproof and waterproof papers....lbs...dut.	68,476	14,874	22,349	4,061	738,095	242,804	169,170	33,245
Kraft wrapping paper....lbs...dut.	737,511	27,394	1,084,823	15,797	4,615,924	183,386	2,548,943	77,842
Other wrapping paper....lbs...dut.	229,846	14,609	409,773	17,581	1,304,746	75,817	1,802,212	76,096
Writing and drawing paper, etc....lbs...dut.	373,218	82,813	278,752	56,606	1,996,749	499,884	1,327,381	266,899
Writing paper and envelope combinations ....dut.	.....	[2]2,868	.....	16,334	.....	[2]2,868	.....	89,059
Surface-coated paper ....lbs...dut.	124,503	52,677	88,629	46,577	1,091,054	431,850	563,480	261,534
Uncoated paper, decorated or embossed..lbs...dut.	[2]9,660	[2]2,944	15,573	4,511	[2]9,660	[2]2,944	90,530	21,384
Tissue and similar papers....lbs...dut.	[1]136,326	[1]95,283	.....	.....	[1]2,056,030	[1]1,130,184	.....	.....
Weighing not over 6 pounds to the ream ....lbs...dut.	[2]57,573	[2]27,623	99,056	69,800	[2]57,573	[2]27,623	746,257	528,757
Other ....lbs...dut.	[2]23,442	[2]8,936	33,817	12,966	[2]23,442	[2]8,936	430,607	141,653
Paper boards, n. e. s.—								
Pulp board, in rolls....lbs...dut.	3,661,580	74,769	2,417,923	51,088	26,939,092	616,285	15,787,125	342,841
Paper board, pulp board, n. e. s., and card board ....lbs...dut.	1,128,112	26,072	811,391	18,663	7,975,374	189,929	6,598,496	151,557
Leather board, test and wall board..lbs...dut.	118,294	7,426	162,555	5,368	806,902	41,872	812,897	39,511
Cigarette paper, cigarette books, and covers ....lbs...dut.	1,258,016	418,639	1,580,928	396,869	6,566,432	2,252,222	13,695,817	3,571,879
Hanging paper (wall paper)....lbs...dut.	96,198	38,786	33,004	14,685	1,403,029	400,145	717,109	196,617
Duplex decalcomania paper, not printed..lbs...free	47,855	11,415	22,632	5,308	265,005	63,031	244,663	54,744
Paper boxes ....dut.	.....	134,365	.....	87,771	.....	720,352	.....	493,826
Papier-mâché and pulp manufacturers, n. e. s. ....dut.	.....	52,204	.....	35,839	.....	320,450	.....	181,644
All other paper and manufactures....dut.	.....	239,722	.....	205,287	.....	1,636,320	.....	1,184,519
WOOD PULP								
Mechanically ground wood pulp....tons..free	[1]10,425	[1]277,439	.....	.....	[1]128,828	[1]3,593,166	.....	.....
Unbleached ....tons..free	[2]5,946	[2]172,853	11,231	290,297	[2]5,946	[2]172,853	79,476	2,022,218
Bleached ....tons..free	[2]177	[2]4,983	833	21,735	[2]177	[2]4,983	4,632	112,292
Sulphite wood pulp....tons	85,394	4,819,668	73,485	3,565,031	506,021	29,484,174	420,429	21,325,134
Unbleached ....tons..free	57,755	2,912,524	47,094	1,966,429	340,989	17,516,061	256,930	11,181,629
Bleached ....tons..free	27,639	1,907,144	26,391	1,598,602	165,032	11,968,113	163,499	10,143,505
Imports from:								
Finland ....tons	10,209	509,921	12,683	469,029	51,270	2,594,510	51,544	2,102,706
Germany ....tons	3,325	223,011	5,451	304,795	34,816	2,349,302	31,470	1,829,833
Norway ....tons	6,614	404,726	69	3,939	34,651	2,216,445	17,065	883,856
Sweden ....tons	33,657	1,841,791	27,783	1,255,588	188,020	10,321,663	162,360	7,536,859
Canada ....tons	30,022	1,768,172	25,353	1,442,998	188,137	11,534,250	143,449	8,333,373
Other countries ....tons	1,567	72,047	2,146	88,682	9,127	468,004	14,541	638,507
Sulphate wood pulp, unbleached (kraft pulp) ....tons..free	26,682	1,336,254	24,913	874,377	174,965	8,829,966	120,090	4,734,251
Imports from:								
Finland ....tons	2,623	115,847	5,575	187,057	20,560	934,239	16,474	514,163
Norway ....tons	669	29,809	.....	.....	6,778	320,924	2,417	82,405
Sweden ....tons	18,658	915,636	17,345	548,807	105,840	5,080,795	81,655	2,915,025
Canada ....tons	4,683	272,668	1,093	57,829	38,915	2,366,544	17,997	1,122,445
Other countries ....tons	49	2,294	900	80,684	2,872	127,464	1,547	100,213
Sulphate wood pulp, bleached....tons..free	2,290	135,396	2,093	188,557	7,727	582,624	18,606	1,288,851
Soda pulp ....tons..free	[2]252	[2]16,992	243	13,590	[2]252	[2]16,992	1,953	105,857
Other pulp ....tons..free	260	18,370	9	1,726	2,166	157,301	117	11,253
CRUDE PAPER STOCK								
Rags for paper stock....lbs...free	24,015,864	462,383	9,123,880	134,767	189,803,954	3,941,897	62,342,206	849,773
All other paper stock....lbs...free	25,208,038	254,859	9,142,543	143,031	134,355,188	1,950,264	57,691,829	897,658
CHEMICALS AND OTHER PAPER MAKERS' MATERIALS								
Colors, dyes, stains, color acids, and color bases, n. e. s....lbs...dut.	415,705	386,821	395,025	458,666	2,650,044	2,796,569	2,432,698	2,792,090
Imports from:								
Belgium ....lbs.	6,482	9,971	1,985	1,888	31,025	38,112	26,057	32,734
France ....lbs.	23	19	16,358	24,250	13,551	17,816	65,739	101,554
Germany ....lbs.	304,892	281,208	293,043	325,592	1,791,366	1,895,602	1,397,263	1,523,640
Italy ....lbs.	132	115	1,747	3,578	132	115	13,025	14,392
Switzerland ....lbs.	92,190	82,735	73,377	92,150	747,798	782,493	848,821	1,027,179
United Kingdom ....lbs.	10,641	10,142	6,507	9,092	42,537	41,515	58,842	66,010
Other countries ....lbs.	1,345	2,631	2,008	2,116	23,635	20,916	22,951	26,581
China clay or kaolin....tons..dut.	24,071	234,252	11,575	96,532	136,625	1,427,300	67,973	599,413
Casein or lactarene ....lbs...dut	425,829	39,921	364,169	15,417	16,095,462	1,785,508	2,299,126	107,742

[1] Ending June 17, 1930. [2] Beginning June 18, 1930.

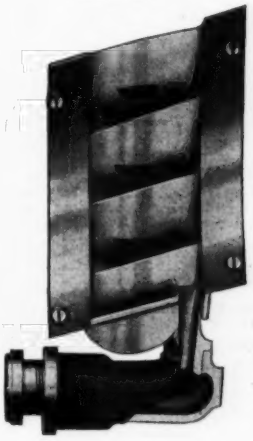
(Continued on page 44)

TERRY



Action of Steam in Terry Wheel

Reversing Chamber and Nozzle



LARGE CLEARANCE — EASY OPERATION

In the Terry Wheel Turbine fine blade clearance is not essential to high operating efficiency. The actual clearance between the moving and stationary blades is greater than ⅛ inch. End play cannot affect this clearance and the side clearance is 1 inch or more. It is therefore not essential to make frequent adjustments of the thrust to maintain efficient and safe operation.

Clearance in the Terry blading may be reduced only by excessive wear of the main bearings, but even if this should occur, the projecting rims on the side of the wheel would rub on the smooth protecting surfaces of the reversing chamber, thereby automatically stopping the turbine before damage could result. Replacement of the interchangeable bearings immediately restores the original clearance.

The TERRY STEAM TURBINE COMPANY
TERRY SQUARE, HARTFORD, CONN.
Steam Turbines - Gears - Shaft Couplings

T-1073

PAPER AND PAPER STOCK IMPORTS AND EXPORTS OF THE UNITED STATES

(Continued from page 42)

EXPORTS—PAPER

	June 1930 Quantity	June 1930 Value	June 1931 Quantity	June 1931 Value	Six Months Ending June 30 1930 Quantity	Six Months Ending June 30 1930 Value	Six Months Ending June 30 1931 Quantity	Six Months Ending June 30 1931 Value
PAPER AND MANUFACTURES	.....	$2,482,864	.....	$1,935,747	.....	$16,722,089	.....	$12,125,865
Printing paper—								
News print paper ..... lbs.	1,915,963	79,160	1,312,561	44,360	12,186,350	499,318	8,551,046	289,967
Exports to:								
Europe ..... lbs.	184,921	9,539	21,519	650	970,094	54,387	718,255	25,828
Canada ..... lbs.	.....	.....	51,566	2,138	19,245	843	122,840	5,343
Central America ..... lbs.	148,090	5,498	86,304	2,908	873,383	31,712	577,841	19,615
Cuba ..... lbs.	355,817	16,587	457,355	16,996	1,753,271	72,449	2,077,733	77,228
South America ..... lbs.	278,016	10,240	100,178	3,012	2,812,161	94,459	861,929	27,830
China, Hong Kong, and Kwantung... lbs.	241,514	13,525	.....	.....	1,735,402	98,653	150,267	3,813
Philippine Islands ..... lbs.	665,230	21,988	580,538	18,011	3,491,456	122,901	3,737,840	118,550
Other countries ..... lbs.	42,375	1,783	15,101	645	531,338	23,914	304,341	11,760
Book paper, not coated ..... lbs.	2,554,667	199,497	2,058,641	127,554	19,606,243	1,325,841	9,520,716	613,313
Exports to:								
Europe ..... lbs.	68,690	4,906	26,667	2,762	388,984	35,393	178,527	15,246
Canada ..... lbs.	653,509	58,543	376,753	20,540	5,479,333	341,847	2,235,020	132,529
Mexico ..... lbs.	75,089	9,823	24,019	2,661	402,508	43,717	221,767	22,841
Cuba ..... lbs.	348,039	24,531	258,141	16,493	2,354,819	162,005	1,347,333	88,269
Argentina ..... lbs.	159,740	10,970	151,940	11,060	803,607	59,345	626,257	38,370
Other South America ..... lbs.	230,951	18,921	220,182	14,919	1,052,069	81,802	691,731	49,435
China, Hong Kong, and Kwantung... lbs.	442,533	27,654	167,254	8,928	4,500,974	275,572	1,190,610	66,380
Philippine Islands ..... lbs.	216,489	18,242	493,260	27,978	2,392,726	154,494	1,468,182	95,343
Australia ..... lbs.	65,766	4,864	168,077	9,611	558,199	42,886	706,610	39,495
Other countries ..... lbs.	293,861	21,043	172,348	12,602	1,673,024	128,780	854,679	65,405
Cover paper ..... lbs.	207,445	31,132	128,465	18,861	1,246,281	199,740	904,949	137,784
Greaseproof and waterproof paper ..... lbs.	290,693	65,371	420,777	91,671	1,696,481	334,142	2,523,195	488,494
Overissue and old newspapers ..... lbs.	13,000,288	104,793	17,703,285	136,642	83,871,934	717,217	92,911,061	679,106
Wrapping paper ..... lbs.	3,145,899	214,922	1,925,680	132,863	23,585,540	1,504,281	16,139,851	874,376
Surface-coated paper ..... lbs.	629,540	66,394	466,726	45,449	4,977,410	543,386	3,007,420	330,374
Tissue and crepe paper ..... lbs.	221,257	52,634	310,500	44,305	2,563,931	481,250	1,675,203	269,244
Toilet paper ..... lbs.	806,284	82,873	670,409	60,225	3,952,701	430,130	3,902,361	416,255
Paper towels and napkins ..... lbs.	304,850	31,736	253,459	29,508	2,053,831	232,577	1,867,530	181,994
Boxboard (paperboard and strawboard) ..... lbs.	6,385,728	159,634	3,904,354	100,541	35,465,998	870,799	30,629,679	719,736
Bristols and bristol board ..... lbs.	155,118	15,938	96,510	8,678	1,208,475	113,374	976,993	99,077
Other paper board ..... lbs.	2,644,436	117,848	3,080,599	130,167	19,600,932	941,163	23,646,722	846,619
Sheathing and building paper ..... lbs.	1,949,112	57,590	1,612,801	50,311	10,226,131	359,872	9,251,599	274,656
Fiber insulating lath or board ..... sq. ft.	6,612,094	198,511	3,676,009	104,570	34,801,026	1,101,115	21,024,195	657,473
Wall board of paper or pulp ..... sq. ft.	1,874,959	60,344	1,706,088	47,727	15,617,543	505,061	10,081,847	319,476
Blotting paper ..... lbs.	252,787	29,627	202,429	21,969	1,676,814	197,246	1,211,038	134,863
Filing folders, index cards, and other office forms ..... lbs.	117,614	50,714	83,165	33,541	843,071	325,025	742,608	242,186
Papeteries (fancy writing paper) ..... lbs.	57,394	12,207	20,086	4,828	306,773	66,240	151,005	37,806
Other writing paper ..... lbs.	2,286,656	181,799	1,186,320	101,816	11,923,898	1,186,315	7,434,802	728,495
Paper hangings (wall paper) ..... rolls	74,130	14,110	113,021	11,424	2,064,717	317,357	2,102,147	240,905
Paper bags ..... lbs.	851,261	66,350	996,162	65,585	4,820,647	414,364	6,311,646	449,715
Boxes and cartons ..... lbs.	1,596,169	112,363	1,542,124	91,124	12,676,755	733,007	7,561,958	494,815
Envelopes ..... lbs.	159,237	27,510	121,679	17,179	1,216,897	199,286	888,951	134,253
Vulcanized fiber sheets, strips, rods, and tubes ..... lbs.	344,547	86,995	267,951	73,284	2,407,631	596,012	1,608,168	416,595
Cash-register and adding-machine paper ..... lbs.	470,791	40,137	872,216	69,047	2,904,770	258,452	3,992,200	321,687
Other paper and paper products	.....	322,675	.....	272,518	.....	2,269,519	.....	1,726,601
WOOD PULP AND PAPER STOCK								
Sulphite wood pulp ..... tons	3,759	202,796	4,247	188,261	16,885	930,963	18,878	886,940
Soda wood pulp ..... tons	74	5,600	71	5,019	1,413	109,336	683	49,989
Other wood pulp ..... tons	171	10,407	52	3,260	4,370	179,167	820	31,378
Rags and other paper stock ..... lbs.	4,056,081	61,757	4,915,829	56,614	31,415,484	479,151	31,062,965	346,132
PAPER AND PULP MILL MACHINERY								
Paper and pulp mill machinery	.....	362,179	.....	120,893	.....	1,597,845	.....	758,296

Paper Merchants Plan Fall Meeting

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., August 31, 1931.—Preparations are being made at this time for the Fall meeting of the National Paper Trade Association which is to be held in the Hotel Stevens, Chicago, October 5, 6 and 7. A sound and business like program is being arranged for both the fine and coarse paper divisions, the facilities of the Stevens expecting to add materially to an unusually successful program. The Salesmen's Association of the Paper Industry will hold its Fall Luncheon event on Monday noon, October 5. The speaker for this luncheon has not as yet been announced but Harold Knott, president of the association, says that the program committee will have the announcement concerning the speaker ready in a short time. Golf prizes, involving the Middle Western and the Eastern division, will also be awarded at the luncheon which is always one of the big events for the salesmen's group.

Take Over Carthage Pulp & Board Co.

[FROM OUR REGULAR CORRESPONDENT]

CARTHAGE, N. Y., August 31, 1931.—Among the properties taken over by Jefferson county at the annual tax sale this week is that of the Carthage Pulp & Board Co. The sales are conducted for the purpose of protecting the county in the matter of unpaid state and county taxes said to be overdue.

The total bids placed by the county amounted to $8,961.10 which included the two most important pieces of property in the entire list, those of the Carthage Pulp and Board Company. The property is assessed for $161,704 against which there are $400,000 in bonds. The mill is located in West Carthage and several acres of land are also included in the property. The tax on one section of the property was $5,998.08. The amount of tax on the other portion was $1,137.92, covering water rights.

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CORRECTED UP TO DATE

The 56th Consecutive Annual Edition

THE OLDEST INDUSTRIAL DIRECTORY IN THE UNITED STATES

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Classified List of Pulp Mill Products
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Envelope Manufacturers
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SAFETY IN PAPER MILLS

During the week of October 12 to 16, many representatives of paper and pulp companies will meet at the Stevens Hotel in Chicago to conduct a cooperative program to consider practical ways and means to prevent accidents and accident costs for the industry. This accident prevention program, as an important part of the Twentieth Annual Safety Congress and Exposition, will be conducted by the Paper and Pulp Section of the National Safety Council. There also will be a number of other program sessions of special interest to the industry. These will include sessions on Industrial Health, the Foremen's Forum, and the special sessions of the Delivery, Taxicab and Bus Section and Street and Highway Traffic Section devoted to selection and training of truck drivers and the safety maintenance of trucks.

The four half-day program sessions and the one luncheon session of the Paper and Pulp Section will be held on Tuesday, October 13 and Thursday, October 15. At the Tuesday morning session General Chairman W. J. Brennan, State Department of Labor and Industry of Maine will give a "Resume of Year's Activities." E. E. Grand, Chairman, Statistics Committee will review "Trend of Accidents in Paper and Pulp Industry." J. J. Plzak, safety director, Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., will talk on, "Why Safety Must Be a Part of Our Daily Tasks." Allan Hyer, The Black-Clawson Company, Hamilton, Ohio, will speak on "Safety on the Paper Machine."

The feature address for the Tuesday afternoon session will be "Hazards Peculiar to the Box Board Industry and Their Elimination" by R. S. Hiney, assistant manager, Ogden Division, Container Corporation of America. Following the election of officers there will be a "question box" to consider a variety of safety topics of the industry. It is planned to continue this feature on Wednesday when there will be no regular program sessions. The questions will be divided and a number of special groups will meet in various rooms for detailed consideration of important safety problems.

Feature numbers of the Thursday morning session will be on a talk on "Electrical Hazards of the Pulp and Paper Industry" by H. D. Banta, Hoberg Paper and Fibre Company, Green Bay, Wis.; and a talk on "Unusual Accidents and Their Remedies" by G. T. Adams, general supervisor, International Paper Company, New York City. Considerable time is also alloted for a report on the unanswered questions assigned to the special Wednesday groups.

The Thursday afternoon session will be devoted to a report on the annual safety contest of paper and pulp companies and the awarding of certificates by A. Scott Dowd, chairman, Statistics Committee.

The Thursday afternoon session will include a discussion of "Hazards Peculiar to Sulphite Manufacture and Their Remedies" by a speaker to be announced. The topic "The Difference Between Carelessness and Unsafe Practices" will be discussed by M. G. Hoyman, Director, Main Office Service Unit, Kimberly-Clark Corporation, Neenah, Wis. "Organization of Safety Activities on the Pacific Coast" will be discussed by R. H. Scanlon, Powell River, B. C., Regional Director for Pacific Coast, Paper and Pulp Section, National Safety Council.

The Paper and Pulp industry during the past three years has made notable safety progress, in the reduction of accident severity rate by 28 per cent. Only three other industries—meat packing, electric railway and ceramic have achieved greater accident severity reductions. This improvement is indicated by the records of 115 establishments that have reported during each of the past three years to the National Safety Council. This group also reduced their fatality rate by 28 per cent in three years as compared to a reduction of 5 per cent for all industries.

During 1930, 232 establishments reported their accident experience to the National Safety Council. This includes three special groups. Manufacturers of envelopes and other paper goods have the lowest accident frequency rate —9.23 accidents per one million man-hours worked as contrasted with 18.47 for all industrial workers. This group also had a very low accident severity rate. Only .37 days were lost per one thousand hours of work, as contrasted with an average accident severity rate of 1.97 for all industrial workers.

In comparison, the paper box and containers manufacturing group had a frequency rate of 23.19, and a severity rate of 2.05. Paper and pulp mills had still higher rates—26.37 for frequency and 2.16 for severity. A total of 151 paper and pulp mills reported to the National Safety Council. Eight of these, with totals of employees varying from 33 to 204, reported not a single lost time accident for the year. Twenty-seven additional plants, with from 71 to 1,821 employees, had accident frequency rates varying

from 2 to 9.95, though several of these plants had rather high accident severity rates. As contrasted with these favorable reports, five plants at the bottom of the list, with from 36 to 607 employees, had accident frequency rates which varied from 105.53 to 203.50. Thus, the highest accident frequency rate was almost eight times as great as the average for the 151 establishments.

One of the features of the National Safety Congress will be the Annual Safety Exhibition in the large Exhibit Hall of the Stevens Hotel. More than 100 exhibitors will display a panorama of standard safety equipment, and latest developments in safety appliances. This exhibit will include many articles of interest to the paper and pulp industry.

The general safety exhibit of interest to all industries will include fire protection equipment, safety ladders and scaffolding, leather safety appliances and belts. There will be a display of such efficiency equipment as electric floor scrubbing and polishing apparatus, improved industrial lighting, improved chair and other devices to lessen fatigue. There will be exhibits of factory sanitary equipment, safety emblems and trophies and awards, and extensive displays of first aid materials.

There will be an educational exhibit by the U. S. Navy showing life saving appliances, and a model of the new type hangar with the world's largest Zeppelin just completed at Akron. The exhibit from the U. S. Marine Corps will demonstrate the aid given in such disasters as the earthquake in Nicaragua and the hurricane in Haiti. There will be an extensive exhibit of safety appliances developed and used by the U. S. Bureau of Mines.

Another exhibit will feature "Mr. Televox," the Westinghouse mechanical man who performs amazing electrical feats. Also a demonstration of their new "Electric Eye," with superhuman sensitivity in performing uncanny feats of electro-photo control which has many practical applications in accident prevention and industrial processes.

The Safety Congress will have a total of 130 sessions in 45 different divisions. The 350 speakers will include outstanding national safety authorities, industrial and business leaders, governmental officials and professional specialists.

It is fortunate that the Congress will be able to utilize the "largest hotel in the world" and one of the world's largest exhibit halls. Chicago, as the nation's leading industrial center, will afford opportunities for safety inspections of plants, tours to study traffic engineering problems and accomplishments, and an opportunity to visit the new headquarters offices of the National Safety Council in the Civic Opera Building.

Among the outstanding speakers at the opening Congress sessions will be Samuel Insull, Jr., President of the Midland Utilities Company, Chicago and H. B. Walker, President of the American Steamship Owners Association, New York City.

In addition to the sessions for specific industries, there will be a number of special industrial sessions. There will be a fire prevention session; and a foremen's forum with a practical demonstration of the "Conference Method" of teaching safety. One evening will be devoted to industrial movies, showing 14 reels on 11 subjects, supplied through the courtesy of the U. S. Bureau of Mines.

There will be six special sessions to consider advance engineering problems, held under the auspices of the American Society of Safety Engineers—Engineering Section, National Safety Council. Some of the subjects are "Building Safety into the Machine," "Safety and the Student Engineer," "Accident Prevention Through Time Study Methods," "A Logical Classification of Accidents," and "Low Voltage Electrical Hazards."

The four sessions on industrial health, with speakers of national prominence, are expected to attract the largest group of industrial physicians and surgeons ever assembled. One of these sessions will be held jointly with the Chemical Section to consider our ever increasing chemical hazards. An open forum session will discuss "What's the Matter with Industrial Health?" Another session will be devoted to "Mental Aspects of Accidents," with addresses and discussions on the mental causes and effects of accidents. The Industrial Nursing Section will discuss "Educational Standards in Industrial Nursing."

One session will be devoted to aeronautical safety. There will be sessions on "Community Safety," "Home Safety," "Child Education." One of the sessions of the Street and Highway Traffic Section, on "The Accident-Prone Driver," should be of interest to all companies which maintain drivers' fleets.

The popular industrial psychology sessions of last year will be repeated. Four early morning classes—at an hour when all delegates can attend—will be conducted by Dr. Harold S. Hulbert, a national authority in the fields of psychology and psychiatry. His four lectures will be on the general theme on "Healthy Thinking versus Accident Risks." His topics are "Normal Thinking," "Personal Practical Application of Some Mental Hygiene Rules," "Use and Misuse of Those Innate Tendencies with Which All Men are Endowed," and "Evolution of the Personality . . . . . Including Safety Rules."

There also will be an early morning "Traffic School" for delegates especially interested in traffic safety problems. These sessions will be supplemented by practical traffic demonstrations in Grant Park, showing vehicle tests and testing equipment, latest traffic control devices and signs, and an accident investigation squad at work. There will be an afternoon traffic observation tour of Chicago.

In the total this will be the most extensive and fully rounded Safety Congress ever held. The program for each special industry will be conducted by the national officers of this cooperative group; and the meetings will be the outstanding safety meetings of the year for this industry. It is significant that industrial safety activities during these times of economy have not slackened. In fact there are many examples of companies that are giving increased attention to their safety programs, since it has been demonstrated that safety activities and operating efficiency are very closely related.

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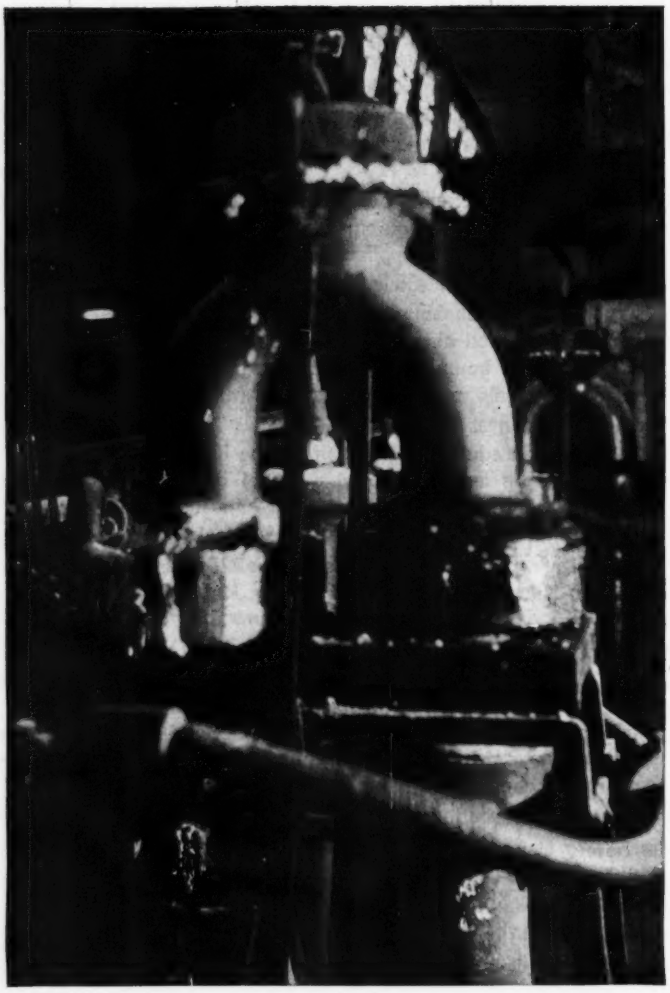

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Edited by Ronald G. Macdonald, Secretary

Current Papermaking Literature

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Drying

Drying Cellulose. Gustav Neumann. Fr. pat. 693,014 (March 29, 1930). Cellulose is dried by means of liquid sulphur dioxide, which is then extracted by lowering the pressure. The dried cellulose is particularly suitable for acetylation or to be transformed into viscose.—A.P.-C.

Systems for Drying Board. B. Raab, Wochbl. Papierfabr. 62, No. 1: 4-6; and No. 6: 120-122 (Jan. 3, Feb. 6, 1931). The author describes in detail the two general methods for drying board, namely, passing the board through a drying chamber in a horizontal or vertical position. Because of mechanical difficulties, the necessary long chamber was divided into two parallel sections instead of having one section on top of the other. The moisture laden air removed from the dryer is subsequently used for giving the board the required moisture content. In the horizontal dryers, belts are used of asbestos or jute into which wires are woven. The temperature and the moisture content of the air used in the drying must be carefully regulated according to the desired properties of the board being made. Rollers are also extensively used in transporting the board through the drying chamber.—J. F. O.

Automatic Regulator for Pulp Drying Machines and Similar Apparatus. H. N. Unden, Sprangsviken. Swed. pat. 70,424 (Oct. 15, 1926). The regulator consists of one or more movable regulator parts, for example revolving rolls, which through its own weight or by a special weight or by spring tension lies on the sheet of stock in such a manner that its position is dependent on the tension of the sheet and this movement of the regulator changes the speed of the drive or the units of the drive, according to whether the tension is too small or too great. The regulator part acts on a contact device which serves for the closing of an electrical current which is connected to the drives of the wet end and the dryers.—J. F. O.

Drying of Paper. Jung. Wochbl. Papierfabr. 62, No. 11: 253-254 (March 14, 1931). Generalizing on the drying of the paper on the dryers in three stages. Short discussion of the machine with a separate dryer felt for each dryer cylinder.—J. F. O.

Heat Transfer Through Cast Iron Drier Shells. F. C. Stamm. Paper Trade J. 92, No. 12:64-67 (March 19, 1931); Tech. Assocn. Papers 14: 141-144 (May, 1931). The influence of the various factors that directly affect the transfer of heat through cast iron drier shells is discussed, and it is concluded that the accumulation of air inside the driers is the only one that largely affects the heat transfer. The following recommendations are given: keep the driers clear of scale and rust inside and out; keep the sheet pressed against the driers as tightly as permissible; maintain enough ciculation through the driers to carry away all the air; watch the surface temperature of the driers continuously to be sure that the best possible heat transfer is being obtained; see that every drier is up to temperature and not operating at 5° to 10° below normal.—A.P.-C.

Paper or Board Drier. Etablissements E. et M. Lamort Fils. Fr. pat. 692,074 (July 28, 1930). The paper or board, either as a continuous web or in sheets, is passed through a chamber where it is subjected to the action of a drying gas such as heated air. The paper or board is supported by a suitable carrier, preferably an endless wire cloth.—A.P.-C.

Analytical

Simple Electrometric Methods of Analysis in the Paper Mill Laboratory. T. Trevor Potts. World's Paper Trade Rev. 95: 1037-1038 (March 20, 1931); Paper Maker 81, No. 4, Suppl.: cxxii-cxxiii (Apr. 1931). Callan and Horrobin's apparatus (J. Soc. Chem. Ind. 47, 329T (1928)) did not give good results for alkalimetric work with the circuit in the original form suggested by Callan and Horrobin; inserting a potentiometer across the output of the transformer allows of much better control of the voltage of the input to the electrodes, enables better adjustment of the initial reading of the measuring instrument, and prevents damage to the latter if the solution under examination happens to be of high conductivity. The outstanding use of this method in the paper mill laboratory is the examination of highly colored caustic liquors; but it is also applicable to other titrations, such as sulphates with barium chloride and precipitation of size by alum. Attention is drawn to the effects of the presence of dissolved carbon dioxide in ordinary distilled water on the potentiometric determination of hydrogen-ion concentration. For ordinary paper mill work, direct determination on the stock taken from the mixing box or

stuff chest is preferable to extraction of paper with distilled water. The quinhydrone electrode used in conjunction with the saturated calomel electrode is by far the most useful in the paper mill laboratory.—A.P.-C.

Analysis of Alum by Means of pH Determinations. G. Kullerud. Papier 18: 252-5 (1930). Commercial alum may contain an excess of Al_2O_3 or of SO_3 deviating from the 1 : 2.35 ratio of c. p. $Al_2(SO_4)_3$. Klemm has established that alum with an excess of Al_2O_3 is best suited for fixing filler and color whereas alum containing an excess of SO_3 is more efficient in sizing paper. The method of analysis consists of accurately weighing out 60 to 70 grams alum and dissolving in 200 grams water, also accurately weighed or measured. The solution is filtered and Sp. G. determined with a pyknometer at 18°C. The conc. of water-free $Al_2(SO_4)_3$ is determined from a table. A pH determination at 18°C, colorimetrically or with hydrogen or quinhydrone electrode, and reference to a table shows excess Al_2O_3 or SO_4.

Paper Testing and Analysis

Methods of Determining Acidity in Paper. P. F. Wehmer Paper Trade J. 92, No. 16: 63-64 (April 16, 1931); Tech. Assocn. Papers 14: 188-189 (May, 1931). Report of the TAPPI subcommittee on paper testing chemical methods. Thirteen laboratories have agreed to co-operate in an investigation carried out on 6 different grades of paper by 5 different methods (which are described) including 2 pH methods (electrometric and colorimeter).—A.P.-C.

Volumetric Composition of Paper. I. The Permeability of Paper to Air. T. Trevor Potts. World's Paper Trade Rev. 96: 1257-1266. 1330 (April 10, 1931); Paper Marker 81, No. 5, suppl.: cxxii-cxxiii (May, 1931). After a brief discussion of the primary requisites for permeability measurements, the effect of changing the conditions of test on the rate of flow of air through paper was studied. The rate of flow is proportional to the area of the sample, provided that it is not so great that, in papers of low permeability, it will be slightly modified at the pressures required to obtain flow of air through the paper. For all practical purposes, the flow is practically proportional to the pressure difference between the two sides of the sample. No change in rate of flow occurs with time. The rate of flow is proportional to some power of the thickness, the numerical value of the power varying according to the sample of paper tested. This is taken as experimental proof that the interfiber spaces of paper are not simple capillaries, and that the thickness of the sample should not enter into the expression of permeability until we know more about its meaning.—A.P.-C.

Porosity of Papers. Giro Silvio. Papeterie Valvassori. Papier 34: 173-181 (Feb. 1931). A study of the Effects of the Thickness of the Sheet and the Pressure on the Determination of the Porosity. The tests were carried out on 100% soda, unloaded and uncalendered paper, all the samples being made from the same beaterful of stock to eliminate possible differences in degree of beating and sizing. *Effect of thickness:* (1) the time required for the passage of a given volume of air through the sheet does not vary directly with the thickness, at least above a certain thickness, which might be called the limiting thickness; (2) above the limiting thickness, the time is practically constant for a given pressure. *Effect of pressure:* Defining the impermeability as the reciprocal of the porosity, and calculating it from the formula $pt/2$, in which p is the pressure and t the time, it was found to be an essentially variable property, increasing with the pressure at which it is determined but varying only slightly above a certain pressure. As it has been suggested that the impermeability is rather a function of $\sqrt{p}$ it was calculated from the formula $t \times f(\sqrt{p})$, but was found to be even more variable when expressed in this form. An attempt to find a formula which would give a practically constant value for the impermeability at different pressures led to the formula $I = t \times p^{0.928}/2$; but even this did not give absolutely constant values. It is therefore considered preferable to always carry out the determination at a definite pressure, which should be selected either in the zone where small variations in p lead to small errors in t, or in the zone of utilization of the paper.—A.P.-C.

Grease Resistance of Paper. Roger C. Griffin. Paper Trade J. 92, No. 15: 44-51 (April 9, 1931); Papier 34: 625-641 (June, 1931); Tech. Assocn. Papers 14: 179-186 (May, 1931). Results of a collaborative study of the turpentine penetration test and the red oil penetration test, applied to greaseproof paper and vegetable parchment, are reported. It is recommended that paper be first tested in a preliminary way by the turpentine penetration method using 4 separate pieces, and that, if the average result of this test is less than 5 minutes, the paper be tested by the red oil penetration method. Adoption of both methods (the technic of which is described in detail) as tentative standard methods by TAPPI is recommended. A method proposed by Ernest Scheller, which is based on the number of transudations per unit area in a definite period of time and the technic of which is described, will be studied.—A.P.-C.

Means for Measuring the Moisture Content of Paper on the Paper Machine. Albert Allen assignor to Atlantic Precision Instrument Co. U. S. pat. 1,781,153 (Nov. 11, 1930.). A hygrometric thread is placed in a position to respond to variations in the moisture content of the sheet, so that the moisture content of the thread bears a definite relation to that of the paper. The change in length of the thread resulting from the variation in moisture content is caused to change the tuning of one of two high-frequency oscillatory circuits near to resonance, one of the circuits having means to excite current flow in the other and the current thus induced is measured. The change in length may also be caused to effect various changes in electrical characteristics of instruments, such as variations in resistance, capacity or inductance, measurement of which will indicate the moisture content of the paper.—A.P.-C.

Method of Automatically Measuring and Controlling the Weight of Paper on the Machine. Louis P. Schweitzer. U. S. pat. 1,789,452 (Jan. 20, 1931). The method consists essentially in continuously measuring an electrical property, preferably the resistance, of a predetermined area of the web at the point where as much water as possible has been removed by mechanical pressure and none has yet been removed by heat, that is, between the last press and the first drier. Variations in the resistance, which are a measure of variations in weight of the sheet, are used to vary the speed of the machine so as to keep the weight per unit area constant.—A.P.-C.

Porosity of Paper. Zellstoff Papier, 11, No. 2: 80 (Feb., 1931). The porosity of various papers are presented in a table, in which the porosity is a function of the density and basic weight. The porosity depends upon the space between the fibers, a short fibered sheet gives a lower porosity than a long fibered sheet. The degree of beating also exerts a great influence on the porosity. Hard sized fibers are less hygroscopic and hence a hard sized sheet has a high porosity since the fibers are prevented from swelling. Sizing with starch or animal size gives a very low porosity. Also a finely divided filler gives a lower porosity than a coarse grained filler. Suction boxes and other parts of the paper machine also exert a great influence on the porosity. Tables are given for the porosity of calendered and uncalendered paper.—J. F. O.

Copper Number and the Rosin-Fat Determination. H. Wenzl, Wochbl. Papierfabr. 62, No. 12: 279-280 (March 21, 1931). A short discussion on the copper number being propounded by the committee for standard methods. The ether extract in the rosin determination shows no appreciable difference in pulp produced in the summer and in the winter. The method for the copper number according to Schwalbe-Wenzl is given in detail.—J. F. O.

Sulphite Papers From Swamp Black Gum*

By G. H. Chidester[1]

Summary

Sulphite pulps, bleaching to a good white color with a small requirement of bleaching powder, have been produced from swamp black gum and made into writing, book, and greaseproof papers comparable in quality with similar grades of commercial papers made from conifer pulps. The pulp strength developed, as shown by pebble-mill tests, was lower than the strength of spruce or hemlock sulphite, but this difference was not so marked after the pulp processing and paper making operations and the papers compared favorably with conifer sulphite papers. The high density of the gum wood and the pulp yields obtainable show that approximately 1300 pounds of pulp can be produced per cord of wood, and the resulting economy, in comparison with spruce is apparent.

Introduction

This report describes experiments in making white pulps and papers from swamp black gum *(Nyssa biflora)*, a southern hardwood. The work was undertaken as an extension of the study of the pulping of southern woods now in progress at the Forest Products Laboratory.

Previous reports [2],[3] from this Laboratory have shown that aspen, birch, maple, and black gum can be readily pulped by the sulphite process, using conditions similar to those suitable for softwoods excepting for a somewhat higher acid strength and a slightly longer penetration period. Such pulps were obtained in high yield and were readily bleachable. Further, although the average length of hardwood fibers is shorter as a rule than that of softwood, a fair degree of strength was developed by beating. The pulps were suitable for certain types of paper in which close formation, finish, and a fair amount of strength are desirable. They might also be used advantageously for other papers when mixed with pulps of longer and coarser fibers, such as those of southern yellow pine.

In previous experiments black gum *(Nyssa sylvatica)* gave very satisfactory results. In view of the abundance of black gum (and also of tupelo gum, which is quite similar) and of its limited value as lumber, it should offer a relatively cheap source of pulp wood. Hence extending the preliminary work on gum in order to determine more fully its possibilities for the production of bleached sulphite papers was deemed advisable.

Experimental Work

A representative cord of the wood, which is shown before and after barking in Figs. 1 and 2, was obtained from Bergaw, N. C., and evaluated by the method standard at the Forest Products Laboratory.[4] Tables 1, 2, and 3, give the results.

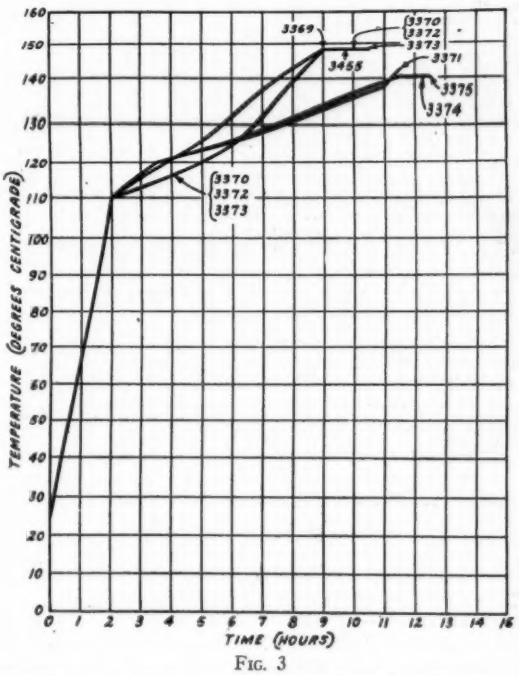

FIG. 3

Temperature schedules used in the experimental pulping of swamp black gum

Seven digestions, using different temperature schedules—both the "straight-line" and the "concave" type of temperature curves—were made to determine the effect of these schedules on the quality and the yield of the pulp. The time of digestion was varied from 9 to 12½ hours and the maximum temperature from 140 to 148 deg. C., with a penetration period of 2 hours in all instances. The different schedules are shown graphically in Fig. 3; the cooking conditions, pulp yields, and bleach requirements appear in Table 4, and the pulp strength data are given in Table 5.

One digestion used a mixture of 50 per cent slash pine (young growth, free from heartwood and of low resin content), and 50 per cent swamp black gum; the results indicate the commercial possibility of such a mixture of long-fibered and short-fibered woods.

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 17-19, 1931.

[1] Member TAPPI, associate engineer, Forest Products Laboratory, Madison, Wis. in cooperation with the Univ. of Wisconsin.

[2] W. H. Monsson, Paper Trade Jour. 86, 17 (1928).

[3] C. E. Curran, Paper Trade Jour. 88, 3 (1929).

[4] Heritage and Monsson, Paper Trade Jour. 87, 18 (1928).

FIG. 1

A racked cord of swamp black gum pulpwood as received.

FIG. 2

A racked cord of swamp black gum pulpwood after barking.

TABLE 1
PHYSICAL CHARACTERISTICS OF THE SWAMP BLACK GUM PULP WOOD USED IN THE EXPERIMENTAL WORK

Number of pieces in cord, unbarked	66
Weight of cord, unbarked	5724 pounds
Weight of cord, barked	5096 pounds
Calculated weight of cord, barked and oven-dry:	
By Method (1): weight barked × oven-dry factor	3088 pounds
By Method (2): solid volume × density	2665 pounds
Average calculated weight of cord, oven-dry	2877 pounds
Solid wood content by water displacement	78.1 cu. ft.
Amount of bark by weight on a peeled log	12.3 per cent
Amount of bark by volume on a peeled disc	17.1 per cent
Average specific gravity; weight oven-dry and volume green	0.546
Average weight per cubic foot; weight oven-dry and volume green	34.1 pounds
Average moisture in wood as received:	
Unbarked	39.0 per cent
Barked	39.4 per cent
Bark alone	36.4 per cent
Average age	74 years
Maximum diameter of barked logs	12.75 inches
Minimum diameter of barked logs	4.25 inches
Average diameter of barked logs	7.28 inches
Average diameter of discs	7.25 inches
Growth rate; rings per inch	20.3

TABLE 2
WEIGHT OF THE ¾-INCH SWAMP BLACK GUM CHIPS USED IN THE EXPERIMENTAL WORK

Weight of chips, wet	28.0 pounds
Moisture content	41.45 per cent
Volume of container	1.22 cu. ft.
Weight of wet chips per cubic foot	22.95 pounds
Weight of oven-dry chips per cubic foot	1.34 pounds

TABLE 3
CHEMICAL ANALYSIS AND COLOR OF SWAMP BLACK GUM PULP WOOD USED IN THE EXPERIMENTAL WORK

	Per cent
Lignin	29.0
Total cellulose	54.3
Alpha cellulose	44.0
Solubility in:	
1 per cent NaOH	16.3
Hot water	4.4
Alcohol-benzol	2.7
Ether	0.3?
Hydrolysis number	22.35
HESS-IVES COLOR READINGS	
Heartwood	Ives parts
Red	42
Green	29
Blue	23
Sapwood	
Red	76
Green	59
Blue	45

Following the pulping trials, paper-machine runs produced book, writing, and greaseproof papers. The characteristics of these papers are presented in Table 6.

Equipment and Methods

The pulping procedure and the semi-commercial equipment used in this Laboratory, together with the pulp testing methods, have been described in previous publications.[5]

Discussion of Results

Wood evaluation

Figs. 4, 5, and 6 show photomicrographs of tangential, radial, and transverse sections of swamp black gum. The structure of the wood is typical of the diffuse porous hardwoods, with their scattered pores or vessels. The thin-walled vessels can also be seen in the photomicrograph of the pulp fibers (Fig. 8).

FIG. 4
Nyssa biflora—swamp black gum. Tangential section x50.

The most interesting point brought out in the physical evaluation of the swamp black gum was its high density. The weight per cubic foot (Table 1) was 34.1 pounds, which is considerably higher than the average of 25 pounds for white spruce. Assuming the same percentage yield by weight of pulp from the two species, it is evident that the gum will give the higher yield per cord.

The color of the wood, particulariy the sapwood portion, is remarkably high. Such wood tends to yield pulp of good unbleached color, although the bleach requirement of gum pulps is not appreciably lower than that of other and darker hardwood sulphite pulps.

The chemical analysis of the wood (Table 3) gave results corresponding quite closely to those obtained from other hard-

[5] Paper Trade Jour. 87, 20 (1928).

TABLE 4.—DIGESTION CONDITIONS AND RESULTS FOR SWAMP BLACK GUM AND MIXED GUM AND SLASH PINE SULPHITE PULPS

			Acid composition									Yield of oven-dry pulp						Color		
Digestion No.	Weight of chips oven-dry, pounds	Acid added, gallons	Total SO_2, per cent	Free SO_2, per cent	Combined SO_2, per ct.	Time to 110° C., hrs.	Maximum temperature, °C.	Time to maximum temperature, hours	Time of digestion, hours	Maximum pressure, lbs. per sq. in.	Type of curve	Total, per cent	Screened, per cent	Screenings, per cent	Total per racked cord, pounds	Bleach requirement, per cent	Condition of pulp	Red, Ives parts	Green, Ives parts	Blue, Ives parts
3369	88.15	55.0	6.05	4.78	1.27	2.0	148	9.0	9.0	75	SLR [1]	45.90	44.60	1.30	1320	0	Unbleached	72	63	57
																10	Bleached	92	90	86
3370	85.0	55.0	5.98	4.68	1.30	2.0	148	9.0	10.0	75	Conc.[2]	45.40	44.30	1.10	1306	0	Unbleached	69	62	56
																8	Bleached	89	88	82
3371	85.2	55.0	6.02	4.74	1.28	2.0	142	11.5	11.5	75	SLR [1]	45.70	44.80	0.90	1314	0	Unbleached	72	64	60
																8	Bleached	88	85	80
3372	85.2	55.0	5.73	4.31	1.42	2.0	148	9.0	10.0	75	Conc.[2]	47.36	46.30	1.06	1362	0	Unbleached	75	68	61
																8	Bleached	95	90	84
3373	84.4	55.0	6.13	4.73	1.40	2.0	148	9.0	10.5	75	Conc.[2]	46.46	45.50	0.96	1336	0	Unbleached	72	64	61
																8	Bleached	94	91	86
3374	84.7	55.0	6.00	4.50	1.50	2.0	140	11.5	12.25	75	SLR [1]	47.37	46.20	1.17	1362	0	Unbleached	74	68	64
																7	Bleached	88	86	83
3375	84.7	55.0	6.46	5.04	1.42	2.0	140	11.5	12.5	75	SLR [1]	46.73	45.80	0.93	1344	0	Unbleached	77	69	65
																4	Bleached	90	86	82
3455 [3]	75.0	55.0	5.95	4.63	1.32	2.0	148	9.0	9.75	75	SLR [1]	48.68	46.65	2.03	1278	0	Unbleached	75	67	60
																8	Bleached	90	89	85

[1] Straight-line rise. [2] Concave upward. [3] A mixture of equal parts of swamp black gum and all sapwood slash pine was used in Digestion 3455.

TABLE 5.—STRENGTH TESTS OF SWAMP BLACK GUM AND MIXED GUM AND SLASH PINE SULPHITE PULPS

Digestion No.	Condition of pulp	Bursting strength factor — Time of milling in minutes					Tearing strength — Time of milling in minutes					Folding endurance — Time of milling in minutes					Tensile strength — Time of milling in minutes				
		0	20	40	60	80	0	20	40	60	80	0	20	40	60	80	0	20	40	60	80
		Points/pound/ream					Grams/pound/ream					Double folds					Breaking length in meters				
3369	Unbleached	0.05	0.34	0.53	0.57	0.55	0.51	1.48	1.59	1.59	1.46	0	10	28	76	82	905	2005	2655	2998	3360
	Bleached	.22	.45	.50	.52	.48	1.05	1.68	1.72	1.71	1.86	2	15	38	54	34	5142	7805	8735	6420	5840
3370	Unbleached	.07	.34	.49	.52	.48	0.67	1.29	1.60	1.55	1.25	0	4	22	40	55	623	2165	2590	2865	3215
	Bleached	.26	.43	.49	.51	.46	1.26	1.77	1.66	1.50	1.50	4	10	35	34	74	1355	2350	2795	2840	3460
3371	Unbleached	.41	.33	.51	.56	.48	0.36	1.22	1.63	1.70	1.48	..	6	17	59	61	....	1910	2460	2925	2915
	Bleached	.27	.49	.55	.54	.54	1.19	1.55	1.44	1.42	1.28	5	27	69	102	170	1537	2609	3122	3172	3805
3372	Unbleached	.10	.47	.62	.66	.60	0.76	1.34	1.69	1.88	1.73	..	11	108	265	246	1199	2391	2924	3049	3246
	Bleached	..	.54	.41	.64	.60	...	1.54	1.64	1.43	1.38	..	28	48	90	123	....	2478	3099	2867	3366
3373	Unbleached	.12	.37	.50	.63	.57	0.64	1.09	1.39	1.50	1.40	1	7	18	63	62	1151	2091	2482	3058	2232
	Bleached	.29	.46	.55	.52	.50	0.92	1.10	1.17	1.14	1.06	4	16	38	43	30	1953	2356	2787	2859	3236
3374	Unbleached	.10	.41	.55	.62	.65	1.09	1.42	1.74	1.77	1.78	0	10	36	180	198	1305	2145	2690	3189	3115
	Bleached	.27	.48	.62	.61	.55	1.20	1.55	1.40	1.62	1.65	4	23	66	107	115	1843	2501	3053	2907	3224
3375	Unbleached	.09	.39	.57	.58	.55	0.62	1.21	1.35	1.48	1.30	..	7	46	129	153	1059	2100	2674	2944	3495
3455 [1]	Unbleached	..	.37	.57	.67	.69	...	1.63	1.76	1.81	1.78	..	20	31	113	188	....	2502	3222	3301	3630

[1] A mixture of equal parts of swamp black gum and all-sapwood slash pine was used in Digestion 3455.

woods. Compared with values obtained from conifers, the cellulose, the lignin, and the alcohol-benzol and ether extracts were relatively low, whereas the hydrolysis number and the alkali solubility were relatively high. This is indication of a high pentosan value, which usually characterizes a hardwood.

Pulp yields

The yields of pulp, in instances when only gum was used (given in Table 4), ranged from 45.4 to 47.4 per cent of the oven-dry wood, the lower yields being obtained with the shorter cooking time and higher maximum temperature. A slightly higher yield (48.7 per cent) was obtained from the mixture of slash pine and swamp black gum. The yields on a percentage of weight basis were slightly less than those for spruce pulped to the same degree. The screenings were low in every case.

As a matter of interest Table 4 presents the calculated yields of pulp for a racked cord of wood. The figures, which range for the pure gum pulps from 1306 to 1362 pounds, are approximately 33 per cent greater than the normal yield per cord from spruce. Because of the lower density and lower solid-wood content per cord of the slash pine sapwood (32.5 pounds per cubic foot and 72.9 cubic feet per cord), the yield of pulp from the digestion of mixed pine and gum was lower per cord of wood than the yield from hardwood alone. In contrast, however, the mixture of pine and gum gave the highest yield on a weight basis (48.7 per cent).

Strength and other physical properties of the pulps

As with previous experiments in pulping hardwoods, the strength of the pulps as indicated by the pebble-mill tests was generallly low in comparison with ordinary conifer sulphite pulps. These tests tend to show that swamp black gum sulphite fiber does not possess as good felting properties as the softwoods ordinarily used for pulp, either because of its length or because of other fiber characteristics not so apparent. Sudworth and Mell give an average length of swamp black gum fibers of 1.56 mm., with a maximum of 2.16 mm. and minimum of 1.06 mm. Sutermeister gives width measurements for black gum *(Nyssa sylvatica)*, which is very similar to the swamp black gum, averaging 0.026 mm., maximum 0.035 mm., and minimum 0.015 mm. These measurements are considerably less than average measurements on the length of white spruce fibers of 2.83 mm., with a maximum of 4.03 mm. and a minimum of 2.43 mm. Width measurements on white spruce gave an average of 0.047 mm., maximum 0.057 mm., and minimum 0.038 mm.

Fig. 7 shows a photomicrograph of unbeaten swamp black gum sulphite pulp. As might be expected from the preceding measurements, the fibers are relatively short and slender. Fig. 8 shows a photomicrograph of the mixture of swamp black gum and slash

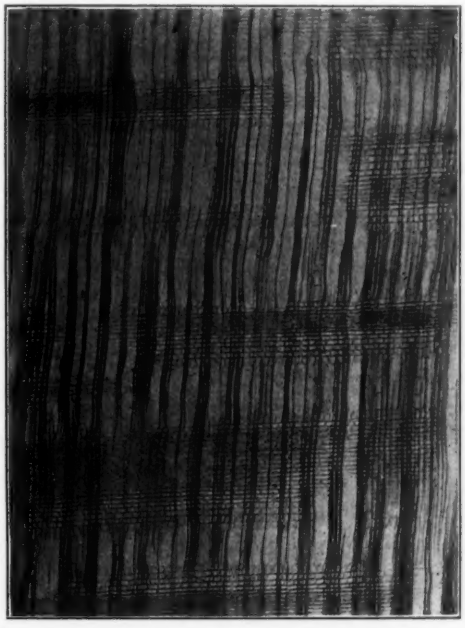

FIG. 5
Nyssa biflora—swamp black gum. Radial section x50.

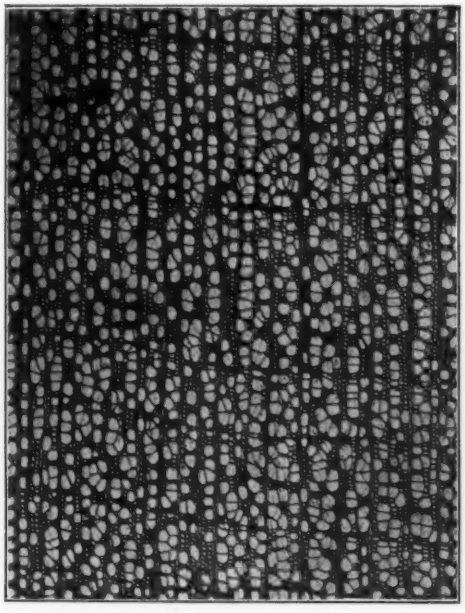

FIG. 6
Nyssa biflora—swamp black gum. Transverse section x50.

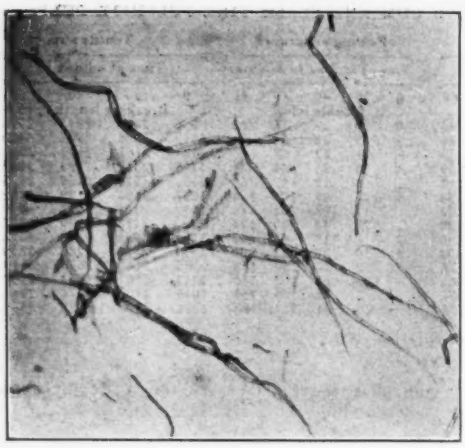

FIG. 7
Swamp black gum sulphite pulp unbeaten.

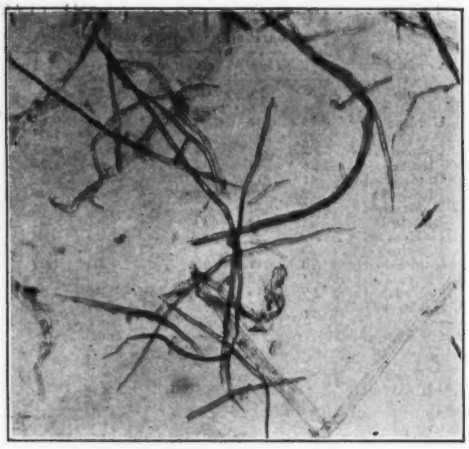

FIG. 8
50 per cent slash pine, and 50 per cent swamp black gum sulphite pulp unbeaten.

pine. The coarse pine fibers stand out clearly in contrast with the fine fibers of the gum.

The maximum bursting strength of the pure gum pulps, unbleached (Table 5), ranged from 0.52 to 0.66 points per pound per ream. The mixed pine gum pulp fell within the same range but showed a greater resistance to processing than the all-gum fibers, not having passed its maximum strength at 80 minutes pebble mill processing. Generally speaking, the pulps digested for a relative long time at low maximum temperature possessed the highest strength although the best all round pulp (Digestion 3372) was made by use of a concave temperature schedule and a maximum temperature of 148 deg. C. reached in nine hours and held for one hour. The folding test showed the widest variation of any of the strength tests on the pulps under consideration. The strength development of pulps before and after bleaching showed little difference.

An interesting point developed in the fact that the papers made from the swamp black gum pulp compared favorably in strength with similar grades made from commercial (softwood) sulphite—an unexpected result in view of the pebble-mill tests on the gum pulps.

As has been previously stated, the unbleached color of the gum sulphite pulps was good and the bleach requirement moderate. In no instance was more than 10 per cent of bleaching powder needed to produce a satisfactory white color and in one instance only 4 per cent was required. The average bleach consumption was 8 per cent. The bleached color was a good, level white with very little of the cream or yellow tinge characteristic of bleached soda or sulphate fibers

In Table 6 are shown results for the paper-machine runs, and also for the purpose of comparison, the averages of a number of tests on commercial samples of writing, bond, book, and greaseproof papers. An examination of these data shows, as noted previously, the tests obtained from the Laboratory paper machine runs to be within the range of the tests obtained from the commercial samples in nearly all instances. One exception, however, is the bursting strength of the greaseproof paper. This might have been improved by further beating.

To show the possibility of mixing the swamp black gum sulphite pulp with the longer and coarser fiber of southern yellow pine, two machine runs (Nos. 188 and 189) were made with bleached sulphate pulp from longleaf pine, which gave equally good results.

The cost estimates of standard conifer sulphite and of swamp black gum sulphite may be compared on the basis of the weight of the wood and the pulp yield figures given in the accompanying tables. Assuming a conversion cost of $15 per ton of pulp, exclusive of wood expense, and assigning arbitrary values (f.o.b. mill) of $14 per cord for spruce and $10 per cord for swamp black gum, the following costs result:

COST OF SPRUCE SULPHITE	
2.0 cords of spruce at $14	$28.00
Conversion cost	15.00
Total	$43.00
COST OF SWAMP BLACK GUM SULPHITE	
1.54 cords of swamp black gum at $10	$15.40
Conversion cost	15.00
Total	$30.40

The difference of $12.60 represents a saving of approximately 30 per cent in the cost of producing a ton of pulp.

Acknowledgment is made to W. H. Monsson, formerly of the Forest Products Laboratory, under whose direction the most of the work described in this report was carried out.

TABLE 6.—BEATER FURNISHES AND STRENGTH TESTS OF MACHINE-MADE PAPER USING SWAMP BLACK GUM PULP

Digestion No.	Beater run No.	Furnish: Pulp Per cent	Furnish: Clay Per cent	Furnish: Size Per cent	Beating time Minutes	Type of paper	Machine run No.	Weight per ream Lbs.	Thickness 0.001 in.	Bursting strength Pts./lb./rm. (24 x 36—500)	Tearing strength G./lb./rm.	Tensile strength Brk. lgth. in meters	Double folds	Opacity	Thickness	Color: Red Ives parts	Color: Green Ives parts	Color: Blue Ives parts
3369	166	100	..	1.5	45	Writing	179	37.0	3.1	0.38	1.13	3778	24	75	4.1	86	83	81
3370	168	100	..	1.5	40	Writing	181	48.0	..	.47	1.12	....	28	71	3.5	85	80	79
3370	168	100	8	1.5	40	Book	182	52.0	..	.40	1.00	....	22	80	4.0	80	81	79
3371	169	100	20	1.5	40	Book	183	50.0	4.0	.34	1.12	....	13	84	4.0	81	81	81
3372	170	100	..	3.0	95	Greaseproof	184	32.0	3.0	.54	.95	....	18	..	..	79	74	71
3373	171	100	..	3.0	58	Writing	185	46.0	3.7	.43	.92	....	22	78	3.6	84	82	78
3374	...	100	20	2.0	43	Book	186	54.0	3.9	.37	.99	6285	11	88	3.8	84	83	83
80 per cent bleached longleaf pine sulphate, 20 per cent swamp black gum sulphite																		
3375	...	...	..	1.5	100	Bond	188	45.0	3.98	.65	1.10	5240	224	..	..	..	..	..
60 per cent bleached longleaf pine sulphate, 40 per cent swamp black gum sulphite																		
3375	...	...	..	1.5	95	Writing	189	48.0	3.3	.47	.80	4097	24	78	3.3	77	77	73
3455[1]	358	100	3	3.0	40	Bond	358	52.0	4.0	.44	.84	....	10	80	3.9	80	81	84
Averages of several commercial samples																		
						Sulphite Writing	...	...	..	.37	.95	3800	20	80	..	..	..	..
						Sulphite Bond	...	...	..	.40–.70	1.10	4000–6000	7–246	..	..	..	..	..
						Sulphite and Soda Book	...	...	..	.35	.70–.95	3500	..	70–90	..	..	..	..
						Greaseproof	...	...	..	.68	.65	....	51	..	..	..	..	..

[1] A mixture of equal parts of swamp black gum and all sapwood slash pine was used in Digestion 3455.

Further Studies On Ground Wood Evaluation*

By E. R. Schafer[1] and Melburn Heinig[2]

Summary

Ground-wood pulp manufacturers, through the News Print Service Bureau, have submitted samples of ground-wood pulp to the Forest Products Laboratory for testing. This paper discusses part of the work that has been done on samples from approximately half of the contributing companies. A summary of the species and condition of the wood at the time of grinding and the grinding conditions is given. The evaluation of the pulps by a screen analysis, a rate of flow test, and a static bending test are discussed. The screen analysis expresses the fiber size of a pulp by a number called the coarseness modulus, which is related to the average fiber length of the pulp. The rate of flow test indicates a relationship to the freeness of pulps and to the strength of pulp boards at the elastic limit.

Introduction

With a view toward evolving better methods of evaluation, samples of ground-wood pulp were submitted by members of the News Print Service Bureau to the Forest Products Laboratory for experimentation. This article presents information obtained on approximately one-half of these pulps by means of a screen analysis test, a rate of flow test, and a static bending test as well as by the more established testing methods. Information is also given on modifications and improvements which have been made in these tests since they were previously reported.[3, 4, 5, 6]

The data have additional interest in that they represent a cross-section of North American ground-wood practice.

Characteristics of the Wood and the Grinding Conditions

Wood

The samples of pulp obtained from the various mills represented woods ranging from Newfoundland to California. In addition one sample of pulp was made from a species of Mexican spruce and another sample was composed largely of spruce from the Archangel region of Russia. Table 1 gives information which was forwarded by the cooperators, on the wood and the grinding conditions. Various species of spruce, fir, balsam, and hemlock are represented. The age of the woods used varied considerably. Both seasoned and green wood were ground but all reported the wood as sound.

Grinding Conditions

The data show the spiral burr and a combination of the spiral and the diamond point as the types of grinder burrs most commonly used. The grinding temperatures varied from 95° to 195° F. The grinding pressure, based on the pressure per unit area of the grinder pocket, also varied considerably. One mill ground at as low a pressure as 11 pounds per square inch. The highest grinding pressure reported was 74 pounds per square inch. The power consumption varied from 56 to 87 horsepower days per ton but most of the pulps were prepared with a power consumption of from 60 to 70 horsepower days per ton.

Experimental Work and Discussion of Results

The pulps were received in laps and slush stock, screened and unscreened. The unscreened pulps were first screened on a flat plate diaphragm screen in which the slots in the screen plate were 0.015 inch in width. All pulps were pressed to a moisture content of about 75 to 80 per cent. The pulp cakes were then rubbed through a three-mesh wire screen. The disintegrated pulps were stored in buckets with tight fitting lids for the four or five months investigation without noticeable change in properties.

The pulps were tested by the screen analysis test, the rate of flow test, and the static bending test. They were also tested for freeness, color, and strength in bursting, tearing, and tension of sheets of the pulp formed on a sheet mold. Developments and improvements in the rate of flow test, static bending test, and screen analysis test were carried on jointly with the testing of the pulps.

The Screen Analysis

Instead of interchanging screen plates for each fraction of pulp as previously reported in the screen analysis test,[4] an apparatus was developed consisting of a series of flat diaphragm screens each of different "mesh." In the operation of this new screen the pulp in a dilute suspension flows by gravity from one screen to the next higher mesh in series, thus making the screening a continuous op-

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* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 17-19, 1931.

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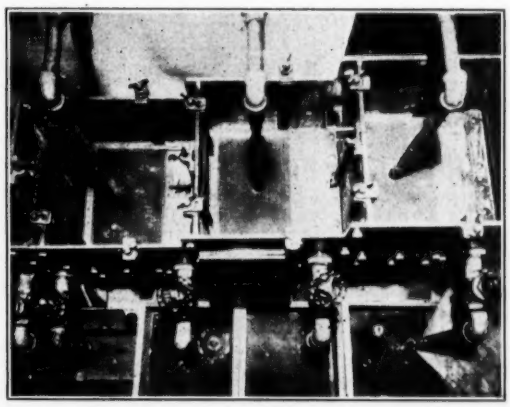
[2] Junior chemist, Forest Products Laboratory, Madison, Wis.

[3] "The Measurement of the Strength and Stiffness of Fiber Boards by Means of Static Bending," by C. C. Heritage, E. R. Schafer and L. A. Carpenter. Paper Trade J. 89, No. 17, 50 (October 24, 1929); Pulp and Paper Mag. of Can. 28, 667 (October 31, 1929); Paper Mill and Wood Pulp News 52, No. 44, 10 (November 2, 1929).

[4] "Screen Analysis As An Aid in Pulp Evaluation," by E. R. Schafer and L. A. Carpenter. Paper Trade J. 90, No. 19, 57 (May 8, 1930).

[5] "A Rate of Flow Test for Evaluating Ground-Wood Pulp," by L. A. Carpenter and E. R. Schafer. Tech. Assoc. Papers 13, 1, 263 (May, 1930); Paper Trade J. 91, No. 3, 57 (July 17, 1930).

[6] "Ground-Wood Pulp Evaluation by Means of Static Bending Screen Analysis and Rate of Flow Tests," by E. R. Schafer and L. A. Carpenter. Tech. Assoc. Papers 13, 1, 267 (May 30, 1930); Paper Trade J. 91, No. 3, 61 (July 17, 1930).



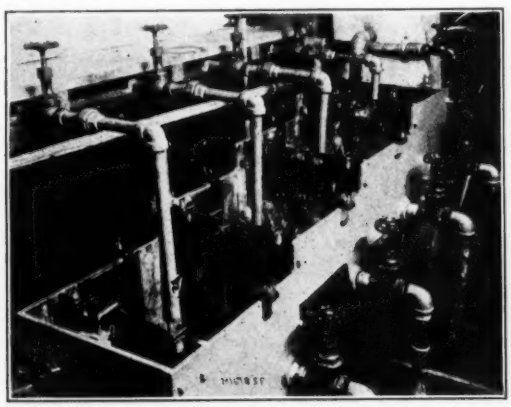


PLATE 1

Four-plate diaphragm screen of laboratory size used for fractionating pulp. Left—Top view. Right—Side view

TABLE 1.—SUMMARY OF GRINDER CONDITIONS

Sample No.	Species	Source	Diameter Inches	Age Years	Condition	Grinder: Type	Grinder: Pocket width and depth Inches	Grinder: Cylinder diameter Inches	Grinder Stone: Kind	Grinder Stone: Grit	Grinder Stone: Width Inches	Grinder Stone: Diameter Inches	Grinding Conditions: Type of burrs: Kind	Grinding Conditions: Type of burrs: Size	Grinding Conditions: Speed R.p.m.	Grinding Conditions: Temperature °F.	Grinding Conditions: Pressure per unit pocket area Lbs./sq.in.	Grinding Conditions: Power consumed H.P.-days per ton
1	Spruce	Northern Ontario	4–12	...	Well seasoned—sound	Magazine	20x48	22	.....	..	..	61	Straight Diamond	2 cut 10 point	212	160	36	..
2a	Spruce	Northern Minnesota	5	60	Well seasoned—sound	4 pocket	....	..	Artificial	46	..	55	Spiral	9 cut x 1¼"	240	160	60 [1]	58
2b	Spruce	Minnesota	5	60	Well seasoned—sound	4 pocket	....	..	Natural	..	..	55	Spiral	9 cut x 1¼"	240	160	60 [1]	58
3	Black spruce	Northern Ontario	6	90	Seasoned 1 month—sound	.....	....	..	.....	..	..	49	Spiral	9 cut x 1½" and 2¼"	240	155	28 [1]	68
4	Spruce	Northern Minnesota	8	...	Green—sound	.....	....	..	.....	..	..	54	Spiral	14 cut x 2½"	225	95	90 [1]	75
5	Hemlock and spruce	Clatsop Co., Oregon	24	75	Saturated—sound	pocket	14x24	16	Natural	Medium	27	54	Spiral Diamond	10 cut x 1½" and 3"	250	160	35	62
6	Spruce 50% Fir 50%	Central Newfoundland	6	90–110	Seasoned—sound	3 pocket	18x34	16	Natural	..	36	56	Spiral	.....	230	130	25	66
7	Spruce 70% Balsam 30%	Adirondacks and Canada	5–7	...	Both green and seasoned—sound	3 pocket	12x24	14	Natural	Medium	27	56	Straight Diamond	4 cut 12 point	220	140	32	56
8	Red and white fir	East slope Sierras	36	150	Seasoned—sound	4 pocket	16x25	16	Natural	Small	26	54	Spiral Diamond	8 cut 8 point	250	140	15	80
9	W. spruce 10% B. spruce 50% Balsam 40%	Upper pen., Michigan	6	25–40	Green	3 and 4 pocket	15x24	16	Artificial Natural	46–50 Medium	.. ..	54 56	Spiral	8 cut	245	150	29	65
10	Spruce	Lake Silt Coos, Ore.	26	100–120	Partly seasoned	3 pocket	14x25	12 and 16	Natural	..	27	50	Spiral, right and left hand	9 cut x 3"	235	195	32	..
11	Hemlock	Columbia R. Basin	30	80–100	Partly seasoned	3 pocket	14x25	12 and 16	Natural	..	27	50	Spiral, right and left hand	9 cut x 3"	235	182	32	..
12	W. hemlock 43% S. spruce 57%	Clallem Co., Washington	28–60	300–350	Both green and seasoned	3 pocket	15½51	14	Both natural and artificial	Medium	54	54	Spiral Diamond	10 cut x 1" 9 point	240	183	32	70
13	W. hemlock S. spruce	Western Oregon	8	Varies	Green—sound	3 pocket	16x52	14	Natural Artificial	.. 46	54 54	56 56	Spiral Diamond	9-10-12 cut x 2½" and 3" 14 point	240	170	11	70
14	Spruce 98% Fir and pine 2%	Archangel, Russia	7	50–100	Green	3 pocket	14x26	14	Artificial	..	60–100	27	Spiral	12 cut x 1½"	240	189	34	69
15	Balsam 80% W. spruce 20%	Montmorency, P. Q.	6	90	Green—over mature	Magazine	50x26	23	Natural	..	54	43–62	Spiral	9 cut x 1½" 8 cut x 1¼"	225	160	74	73
16	W. fir	Northern Idaho	10	60	Green—sound	pocket	16x18	14	Natural	..	..	..	Spiral	9 cut x 2½"	240	160	27	75
17	Spruce and balsam	Upper Gatineau	7	70	Green—sound	3 pocket 4 pocket	15x30 12x24	16 12	Natural	Tufgrit [2] Uffington [2] Read [2]	32 27 26	60 56 54	Spiral	8 cut x 1"	240	155	29	66
18	Oyametl (Abies religiosa)	State of Mexico, Mex.	11	18	Green—sound	Magazine	13x28	12	Natural	Medium	29	59	Diamond	10 point	225	128	22	87

[1] These are pressures in the grinder cylinder. Conversion to grinder pocket basis not possible as pocket and cylinder dimensions were not reported. [2] Manufacturers' names.

TABLE 2.—SUMMARY OF PHYSICAL PROPERTIES OF PULP SAMPLES

Sample number	Rate of flow test constant [1] b	Freeness 0.4% at 20° C. cc.	Strength in static bending: Modulus of—Elasticity Pounds per square inch	Transverse strength Pounds per square inch	Rupture Pounds per square inch	Screen analysis: Retained on 24 mesh Per cent	Retained between 24 and 32 mesh Per cent	32 and 42 mesh Per cent	42 and 60 mesh Per cent	Passing 60 mesh Per cent	Coarseness modulus [2]	Average fiber length mm.	Strength of pulp test sheets: Bursting Pts. per lb. per ream	Tearing Gms. per lb. per ream	Tensile breaking length Meters	Folding Number of: Stretch Per cent	double folds	Color of pulp: White Per cent	Primary hue Per cent	Secondary hue Per cent
1	0.027	250	28500	340	418	20.7	12.1	6.5	5.6	54.6	1.38	....	0.06	0.30	687	3.3	1	63	6.4 Orange	0.0
2a	.040	150	38880	441	608	25.8	11.9	5.4	7.5	49.4	1.57	....	.12	.47	1222	3.0	2	60	5.8 Orange	2.2 Yellow
2b	.055	147	42000	498	710	25.0	11.0	7.3	10.0	46.7	1.58	....	.14	.56	1465	3.3	2	58	6.4 Orange	2.7 Yellow
3	.131	50	59300	718	1022	25.0	6.8	3.5	3.8	60.9	1.31	....	.23	.83	2130	4.0	2	69	5.1 Orange	0.0
4	.585	63	54420	521	691	21.1	5.9	4.3	4.7	64.0	1.15	....	.14	.70	1009	3.6	0	..	.....	.....
5	.073	120	102300	269	760	27.4	10.9	4.5	5.0	52.2	1.56	....	.21	.68	1560	4.3	3	52	5.1 Orange	0.2 Red
6	.095	100	78000	287	652	19.3	6.8	9.9	10.0	53.9	1.28	0.157	.17	.56	1548	4.8	2	58	8.5 Yellow	1.9 Orange
7	.151	67	83000	348	783	18.6	7.5	8.1	9.8	56.0	1.23	.153	.26	.64	2498	4.0	3	56	3.8 Orange	1.1 Red
8a	.179	45	100000	333	877	5.9	4.6	5.5	9.6	74.4	.58	.119	.15	.43	1628	3.5	..	51	3.8 Orange	2.5 Red
9	.122	74	101300	268	816	17.6	7.5	6.6	9.0	59.3	1.15	.144	.19	.58	1626	4.0	..	64	4.5 Orange	1.3 Red
10	.280	27	94000	292	882	18.4	5.6	8.4	6.3	61.3	1.14	....	.35	.77	2427	6.5	11	54	1.9 Orange	1.5 Red
11	.089	73	78500	278	785	16.8	5.4	6.9	8.3	62.6	1.16	.138	.21	.58	1670	4.3	4	54	2.6 Orange	2.3 Red
12	.126	78	82400	296	769	14.5	5.7	8.2	8.4	63.2	1.00	.137	.23	.78	1730	4.3	3	53	3.2 Orange	1.9 Red
13	.116	56	63700	221	653	19.0	4.9	11.7	4.0	60.4	1.18	.143	.20	.84	1440	5.0	..	54	2.5 Orange	0.8 Red
14	.176	51	92500	249	881	14.0	4.0	9.1	7.0	65.9	.93	.132	.24	.80	1632	4.5	..	65	3.5 Orange	0.9 Red
15	.164	46	64000	178	664	12.2	8.2	7.5	5.8	66.2	.94	.132	.21	.73	1490	2.5	..	61	4.7 Orange	0.2 Red
16	.218	58	95250	377	981	27.4	5.4	7.4	6.6	53.1	1.47	.160	.29	.91	1755	3.8	..	59	5.2 Orange	2.3 Yellow
17	.121	65	87900	351	905	9.4	5.3	6.9	9.2	69.3	.76	.126	.26	.71	2122	3.8	..	68	3.2 Orange	3.2 Yellow
18	.054	162	73400	362	842	10.3	8.7	10.3	10.2	60.5	.98	....	.24	.76	1850	4.0	..	47	4.7 Orange	0.2 Red

[1] Constant calculated from the rate of flow — time equation $\log (T + c) = bR + \log A$. Constant b is always negative but in using it to define pulp properties is most conveniently used as a positive number.
[2] The coarseness modulus is an abstract number calculated from the screen analysis which is related to the average fiber length of the pulp.

eration. The fibers, actuated by vibrating diaphragms and agitating sprays, pass through each screen successively until they arrive on a screen the meshes of which are too small to allow their passage. There they collect and are washed off at the end of the test and dried, with this new apparatus it is possible to fractionate four 100-gram samples of pulp per hour. Plate 1 shows the fractionating screen of latest design. The authors are indebted to the Appleton Machine Company, Appleton, Wis., for their cooperation in working out the details of design of this screen and for building the models in the various stages of development.

The screen analyses by the older method with the interchangeable plate screen are given in Table 2. With this procedure a 60-mesh screen is used first for about 10 minutes in order to remove the large fraction which passes this screen, then 42, 32 and 24-mesh screens in the order named for about 5 minutes each. These time limits are not necessarily definitely fixed, however, as a check is made by catching a beaker full of the effluent and noting when it is running practically free of fiber. In most cases the sum of the amounts retained on the 24 mesh and passing the 60 mesh screens accounts for 75 to 80 per cent of the pulp. The amount retained on the 24 mesh screen varied from about 6 per cent to about 27 per cent. The three intermediate fractions accounted for the 20 to 25 per cent of the remaining pulp, the amount being retained by the individual intermediate screens varying from 4 to 10 per cent.

The appearance of the different fractions obtained with this series of screens is characteristic and indicates a fairly definite separation of the fibers into groups according to their size.

Table 3 shows the results of fiber measurements made to determine the fiber-size distribution in the various fractions. In spite of the efforts to insure a complete separation of the fibers there appears to be a wide overlapping of sizes in every fraction. This does not, however, invalidate the usefulness of the method.

The data in Table 3 represent the average of five of the pulps, namely, samples, 7, 8, 12, 16, and 17. The pulps were fractionated and the fiber measurements made on each fraction. The five sets of fiber measurements for a given fraction were then combined. From 350 to 500 measurements were made on each of the fractions retained on the 24 32, 42, and 60 mesh screens, and, because of the inaccuracy involved in measuring very short fibers, about 750 measurements were made in the material passing the 60-mesh screen.

The manner in which the fiber lengths tend to group themselves about the average, or the frequent distribution, was determined by the number of fibers falling within a given range of length instead of the number of fibers of a given single length. This was due to the fact that, even with the apparently large number of measurements taken, the relation of the percentage of fibers of a given length to that of the next higher or lower length was very irregular, and therefore, a curve drawn through such data would not present a true picture of the normal distribution of the fiber

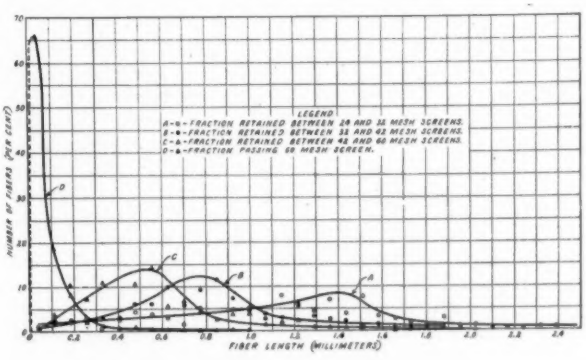

LEGEND
A—a—FRACTION RETAINED BETWEEN 24 AND 32 MESH SCREENS.
B—b—FRACTION RETAINED BETWEEN 32 AND 42 MESH SCREENS.
C—c—FRACTION RETAINED BETWEEN 42 AND 60 MESH SCREENS.
D—d—FRACTION PASSING 60 MESH SCREEN.
NUMBER OF FIBERS (PER CENT)
FIBER LENGTH (MILLIMETERS)

FIG. 1

Fiber-sized distribution of the various screen fractions of ground wood pulp obtained by using 32, 42 and 60 mesh screens.

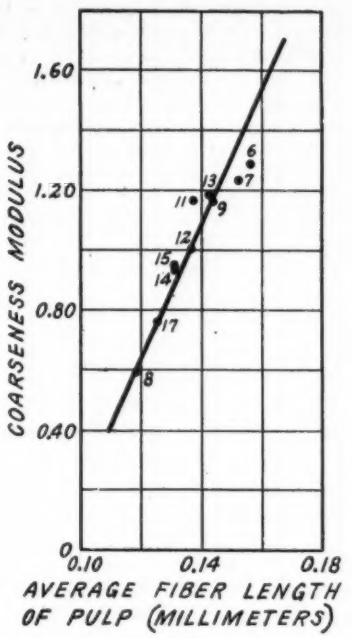


FIG. 2

Relation of coarseness modulus to the average fiber length of ground wood pulp.

lengths. A much larger number of measurements would have smoothed out these irregularities and permitted the use of smaller ranges than reported here.

The measurements of all fibers are not shown in Table 3, but instead, the number and percentage of fibers lying between the limits of fiber length indicated. The abscisses of the points on the curves shown in Fig. 1 are plotted as the mid-points of the range of length chosen. The measurements on the fraction retained on the 24-mesh screen are not presented here, as the fiber distribution

TABLE 3
FIBER SIZE DISTRIBUTION OF THE VARIOUS SCREEN FRACTIONS OF GROUND-WOOD PULP

Fiber length range		Passing 60 mesh screen		Retained between 42 and 60 mesh screens		Retained between 32 and 42 mesh screens		Retained between 24 and 32 mesh screens	
		Fibers measured		Fibers measured		Fibers measured		Fibers measured	
From mm.	To mm.	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
0	0.073	489	65.70	2	0.40	3	0.82	1	0.88
0.073	.147	139	18.70	19	3.76	8	2.19	7	2.05
.147	.220	78	10.50	41	8.12	9	2.47	7	2.05
.220	.294	15	1.92	37	7.33	8	2.19	9	2.63
.294	.368	8	1.07	54	10.70	11	3.02	3	.88
.368	.440	4	.54	49	9.70	11	3.02	9	2.63
.440	.515	7	.94	53	10.50	22	6.02	15	4.38
.515	.588	1	.15	72	14.20	22	6.02	13	3.80
.588	.662	1	.15	28	5.52	46	9.85	10	2.92
.662	.736	...	....	35	6.52	21	5.75	5	1.46
.736	.810	...	....	22	4.36	34	9.32	17	4.97
.810	.884	...	....	13	2.58	42	11.50	11	3.22
.884	.956	...	....	19	3.76	26	7.13	16	4.68
.956	1.030	...	....	15	3.97	17	4.65	17	4.97
1.030	1.102	...	....	7	1.38	10	2.74	13	3.80
1.102	1.175	...	....	9	1.78	11	3.02	27	7.90
1.175	1.250	...	....	11	2.18	23	6.03	20	5.85
1.250	1.322	...	....	3	.59	12	3.29	15	4.38
1.322	1.398	...	....	3	.59	10	2.74	24	7.02
1.398	1.470	...	....	3	.59	8	2.19	13	3.80
1.470	1.545	...	....	1	.20	3	.82	26	7.60
1.545	1.618	...	....	3	.59	5	1.37	11	3.22
1.618	1.691	...	....	0	0	2	.55	9	2.63
1.691	1.765	...	....	1	.20	3	.82	6	1.75
1.765	1.839	...	....	3	.59	2	.55	4	1.17
1.839	1.912	...	....	2	.40	1	.27	10	2.92
1.912	1.986	...	....	1	.20	1	.27	4	1.17
1.986	2.060	...	....	...	....	...	....	4	1.17
2.060	2.115	...	....	...	....	...	....	1	.29
2.115	2.205	...	....	...	....	...	....	2	.59
2.205	2.382	...	....	...	....	...	....	2	.59
2.382	2.375	...	....	...	....	...	....	3	.88
2.375	2.430	...	....	...	....	...	....	3	.88
		Above 0.662 mm.		Above 1.986 mm.		Above 2.060 mm.		Above 2.430 mm.	
		3	0.45	1	0.20	4	1.10	5	1.46
Total		745	100	505	100	365	100	342	100

[1] Constant calculated from the rate of flow — time equation $\log (T + c) = b\bar{R} + \log A$. Constant b is always negative but in using it to define pulp properties is most conveniently used as a positive number.
[2] The coarseness modulus is an abstract number calculated from the screen analysis which is related to the average fiber length of the pulp.

of this fraction varied with the pulp and is, therefore, not entirely a function of the size of the screen and the method of screening. The overlapping portions of the curves in Figure 1 indicate in this case the desirability of eliminating some of the intermediate screens in order to obtain sharper group separations. In commercial work the series of screens needed will depend on the characteristics of the pulp and the degree of separation desired. In some cases a sharp separation into fiber classes may not be necessary. If a sharp separation is desired, a study such as described above, although requiring a large amount of careful work, will be justified.

In view of the fact that 50 per cent or more of ground-wood pulp will pass the 60-mesh screen it is desirable to effect the separation of this fraction into smaller sizes. Though the use of screens smaller than 60 mesh does not appear practical for commercial operations, because such mesh wires will not remain constant under the frequent scrubbing that is necessary to keep them clean, nevertheless, for purposes of study such screens, will be used.

The relation of the screen analysis to the average fiber length of a pulp has been reported previously[4] and a classification of the pulp as to the fiber size by means of a number called the coarseness modulus has been suggested. Fig. 2 is a curve drawn from data obtained in further work on the relation of the coarseness modulus to the average fibre length. The data obtained from the five pulps just discussed were used to calculate the average fiber length of each fraction. These were as follows:

Passing 60 mesh screen	0.091 mm.
Retained between 42 and 60 mesh screens ...	.713 mm.
Retained between 32 and 42 mesh screens ...	.899 mm.
Retained between 42 and 32 mesh screens ...	1.136 mm.

These average fiber lengths for the fractions and the amounts of each fraction as obtained by the screen analysis were used to calculate the average fiber lengths of the whole pulp according to the method described in a previous article.[4] As already mentioned, an average fiber length for the material retained on the 24-mesh screen cannot be taken as applicable for all pulps and the average length of the fiber in this fraction must, therefore, be determined for each pulp with a microscope. The average fiber lengths calculated for eleven of the pulp samples are given in Table 2. Fig. 2 indicates a linear relationship between the coarseness modulus and the average fiber length of the pulp and confirms the results obtained previously from a small number of pulps and fiber measurements.

The value of the screen analysis as a means of evaluating pulps

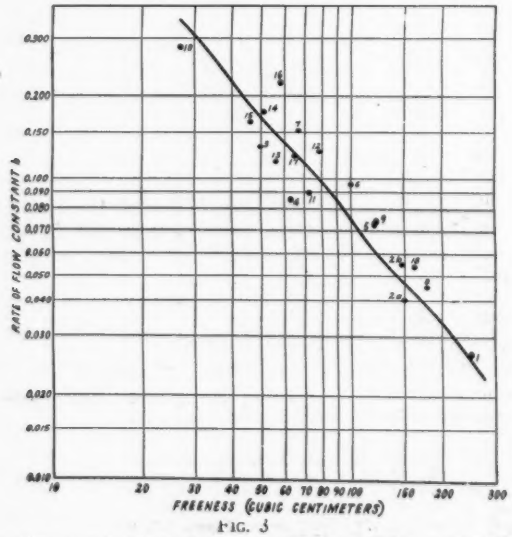


FIG. 3

Relation of the constant b of the rate of flow-time equation to the freeness of ground wood pulp. (Logarithmic coordinates).

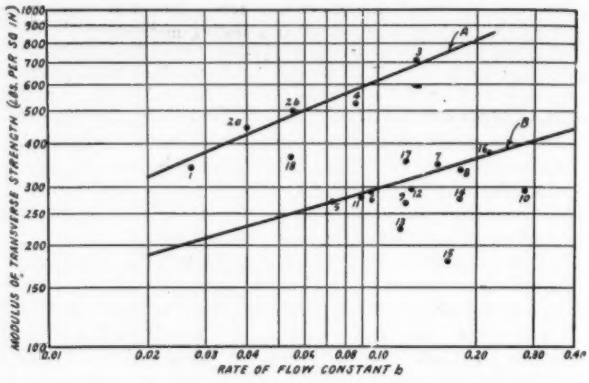


FIG. 4

Relation of modulus of transverse strength of ground wood pulp to the constant b of the rate of flow-time equation. (Logarithmic coordinates).

lies in the fact that with the exception of tedious microscopical methods, it is the only test that measures only one property (average fiber length), independent of other properties. The difficulty of preparing microscopical slides of ground-wood pulp that are representative of the entire pulp and the additional difficulty of measuring the lengths of the fibers on such a slide are well known. The screen analysis is, therefore, considered a much more practical method for determining fiber size distribution than the microscope and there are some points in its favor as being more accurate. If it is desired to depend on the microscope for fiber measurements, the separation of the ground-wood pulp into several size groups permits a more accurate measurement for the entire pulp than the measurement of the entire pulp on one slide.

The Rate of Flow Test

The method of testing pulp by measuring the flow of water, under constant pressure, through a mat of the pulp that has been formed by depositing the fibers from a suspension onto a wire screen[3,6] has been given more study, both from the standpoint of improving the test procedure, and from the standpoint of the interpretation of the results. Although the study is incomplete, there are certain points that are of interest.

It was reported previously[6] that the rate of flow varied with time according to the equation

$$\log (T + c) = bF + \log A$$

where T = the time in minutes,
F = the rate of flow of water in cc per minute, and
A, b, and c constants for the given pulp.

It was also reported that the constant *b* appeared to be related to certain properties of the pulp, particularly to hydration. Data were presented which indicated that the constant *b* was related to the freeness (as determined by the Green Slowness Tester) for samples of chemical pulp taken from the beater at various stages of beating. However, other data presented at that time for ground-wood pulp failed to indicate a relationship. The additional data obtained from the ground-wood pulps under consideration in this report have enabled more study to be given to these conflicting observations.

Fig. 3, which is an average logarithmic curve of the freeness and the constant *b* for ground-wood pulp samples 1 to 18, inclusive, indicates the relationship to be hyperbolic. While the line shown is an average of all the points it may be noted that two parallel lines can be drawn which would perhaps fit the data much better. If such is done the pulps whose points fall on or near a given line should have some property or properties in common. The study has not yet revealed any common properties for these points and, therefore, until such is found there appears to be no justification in drawing more than the average curve.

The inadequacy of the freeness test as a precise measure of any particular or known group of physical properties of pulp is well

known. Consequently, if the rate of flow test is shown to be related only to the freeness test, its value as a testing method will be no greater. A further discussion of the rate of flow test in connection with the static bending test follows:

The Static Bending Test

The evaluation of pulp by determining the strength[1] and stiffness in static bending of boards composed of the pulp has been presented in two former articles.[2, 3] In this method a definite amount of the pulp is formed into a board and dried by a standard procedure. Strips of the pulp cut from the board are supported as a beam at two points and a uniformly increasing load applied midway between the supports until the failure of the specimen occurs. In the apparatus devised to make this test the loading medium has been water which flowed under constant head and rate into a bucket hung from the specimen. The weight of the empty bucket produced an initial deflection in the beam which, on account of its being generally less than the load at the elastic limit, caused no harm, but when the loads were plotted against the deflection in order to obtain the stress-strain curve it was found difficult, because of the shortness of the straight-line portion of the curve, to locate the elastic limit.

Samples 1 to 4, inclusive, in Table 2 were tested by the foregoing procedure. In testing the other pulps, however, the bucket was exchanged for a vessel of lighter weight. The initial load was thereby reduced from about 3.5 pounds to 1.3 pounds and more points were obtained in the straight line portion of the stress strain curve, which increased the precision in locating the elastic limit. The loads and deflections at elastic limits located by this modified method were found to be generally lower than those previously obtained and consequently the moduli of transverse strength were lower. In addition to the preceding change, when testing samples 16, 17, and 18, the weight of pulp taken to form the board was reduced from 100 grams to 80 grams, the span of the beam in the static bending test was increased from 6 inches to 8 inches, and the rate of loading was reduced from 1 pound per minute to 0.25 pound per minute. These additional changes have resulted in more satisfactory stress-strain curves and in greater precision in locating the elastic limits. Furthermore, results for the modulus of transverse strength are not only lower in value with the present apparatus but the variation in the values among different pulps is not so great as formerly.

It was reported previously[6] that the relation between the logarithm of the constant b of the rate of flow test equation and the logarithm of the modulus of transverse strength appeared to be linear. Fig. 4 shows the relation on the basis of the more recent results. Curve A is drawn as an average of the points for samples 1 to 4 inclusive which were tested by the older static bending test procedure. Curve B is drawn through the points for the other samples, tested by the newer procedure. In general, the linear relationship previously reported was confirmed but certain results are badly out of line. These instances, represented by the points for Samples 10, 13, 14, 15 and 18, have been checked and the tests repeated but thus far the reason why these points and to a lesser extent the points for Samples 9 and 17 do not "fit in" has not become evident. Future work on the rate of flow test is planned that is expected to not only improve the test procedure but to give more information on the interpretation of the test results.

Non Fibrous Materials Testing Committee*

Most of the efforts of the Materials Testing Committee during the past year have been spent on re-organization and planning for the future. It was decided at the September, 1930 meeting of TAPPI that a summary of the work of the committee to date should first be prepared and that the chairman should present at each annual meeting in the future a report covering important developments in the field of materials testing during the year, as well as work accomplished by the committee.

The summary of the past work of the committee is presented first chronologically and will later be carried through by subjects.

1915. Technical Section of American Paper and Pulp Association formed at Chicago.[1]

Sept., 1915. Meeting of Technical Section at New York.[2] Committee on Standard Methods of Testing Materials Used in the Manufacture of Paper appointed, H. P. Carruth, chairman.

Oct., 1915. First meeting of committee.

Feb., 1916. First annual meeting of Section.[3] Name changed to Technical Association of the Pulp and Paper Industry. First report of committee.

1916. Max Cline chairman of committee.[4]

May, 1916. Report on methods for alum, rosin, rosin size and bleach.[5]

Sept., 1916. Report on methods for starch and starch products, lime, caustic soda, soda ash and sulphuric acid.[6]

Oct., 1916. Paper published on method of testing bisulphite liquor, by A. Christensen.[7]

Feb., 1917. Second annual meeting. No report from committee.

1918. W. H. Gesell chairman of committee.[8]

Feb., 1918. Third annual meeting. Brief progress report of committee.[9]

Dec., 1918. Questionnaire sent out by committee on methods for moisture in rags, sulphate of alumina, sulphur, coal analysis, daily solutions, cooking acid, bleaching powder, starch and starch products, soda ash, sulphuric acid, caustic soda, water, rosin and rosin size.[10]

Feb., 1919. Fourth annual meeting. Report of committee on methods for sulphate of aluminum, sodium chloride, sulphur, coal, daily solutions, cooking acid, bleaching powder, caustic soda, water, rosin and rosin size.[11] These methods were adopted as standard at the annual meeting.[12] The methods of testing pulp for moisture were also discussed and further study recommended.

Oct., 1919. Report of committee,[13] mainly on methods of sampling pulp. Also discusses moisture in rags and method of alum testing.

Apr., 1920. Paper on limestone analysis published by W. E. B. Baker.[14] A very exhaustive discussion.

Apr., 1920. Progress report of committee by E. C. Tucker, chairman.[15]

Apr., 1921. Sixth annual meeting. Report of committee on methods for bleaching powder, aluminum sulphate, sampling of rags for moisture, specifications and methods for crown filler and moisture testing of woodpulp.[16] (The latter method was adopted by the Association).

Apr., 1921. Committee on coated papers reported a method for testing casein.[17]

Apr., 1921. N. Folke Becker, chairman.

Apr., 1922. Seventh annual meeting. Report of committee[18] recommends adoption as tentative of methods already proposed for aluminum sulphate, soda ash, lime, crown filler.

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., Feb. 17-19, 1931.

[1] Paper, 16 (No. 9), 19.
[2] ibid., 17 (No. 3), 11.
[3] ibid., 17 (No. 24), 138.
[4] ibid., 18 (No. 2), 19.
[5] ibid., 18 (No. 9), 11.
[6] ibid., 19 (No. 4), 60.
[7] ibid., 19 (No. 5), 16.
[8] ibid., 21 (No. 24), 19.
[9] ibid., 21 (No. 24), 17.
[10] ibid., 23 (No. 16), 11.
[11] ibid., 23 (No. 23), 26; Tech. Assoc. Papers II, 4.
[12] ibid., 24 (No. 1), 21.
[13] ibid., 25 (No. 6), 15.
[14] ibid., 26 (No. 7), 70.
[15] ibid., 26 (No. 7), 224; Tech. Assoc. Papers III, 30.
[16] Tech. Assoc. Papers IV, 52-59.
[17] Clarke Marion, Tech. Assoc. Papers IV, 48.
[18] Tech. Assoc. Papers V, 75.

Apr., 1923. Helen U. Kiely, chairman.

Apr., 1923. Eighth annual meeting. Report of committee[19] suggests two kinds of methods for each material, one of very high degree of accuracy which would probably be only occasionally used in case of dispute or as a final check and the other of a simpler nature and more practical for routine testing. Also proposes methods for fillers, colors, glue, water, and cooking acids; and that methods be published in pamphlet form.

Apr., 1924. Ninth annual meeting. Report of committee[20] announces publication of pamphlet of Standard Methods for Testing Materials which comprises methods for 30 materials, including in addition to those previously mentioned, black ash, bleach sludge, casein, clay, aniline dyes and pigment colors, ultramarine, formaldehyde, gasoline, sodium silicate, sludge from causticizing pans and sulphur dioxide.

Apr., 1924. Sectional meeting on materials testing discusses testing pulp for strength and color.[21]

1925. M. A. Krimmel, chairman.

Feb., 1925. Tenth annual meeting. Article published on standard method for testing rags.[22] Committee report[23] discusses work of past year, comparison of ball mill and beater strength tests of wood pulp and a new method for determining color of rosin size milk. Suggests discontinuing materials testing committee.

Feb., 1926. Eleventh annual meeting. Report of committee[24] calls attention to fact that although it has presented a number of methods, no formal action has been taken by the association assembled in general session to either adopt or reject new methods or modifications of existing standard methods. Recommends that any specifications and methods written either in tentative or standard form by the American Society for Testing Materials for any materials used in the pulp and paper industry might well be adopted as tentative or standard by TAPPI. It might be necessary in some cases to write amendments. Recommends the policy of the A.S.T.M. whereby a method is held tentative for a definite period and then voted upon by all members for adoption or rejection. Points out that no records of committee activities have been kept which can be passed on when the personnel of the committee changes. It was voted in the discussion to recommend to the executive committee a reorganization of committee activities and direction.

At the materials testing sectional meeting[25] the future of the committee was discussed and also methods for testing lime, lime sludge, water and salt cake.

Committee on Standard Testing Methods appointed, consisting of chairman of several committees, to supervise the development of standard methods of testing for TAPPI and to co-ordinate the work on testing methods being done in the standing committees.[26]

Feb., 1927. Twelfth annual meeting. Name of Committee on Standard Methods of Testing Materials now appears as Materials Testing Methods Committee.[27]

Report of Committee states that practically all of the previous methods have been revised and rewritten.[28]

Methods for sulphur, soda ash and caustic soda discussed at materials testing sectional meeting.[29]

1928. J. E. Minor, chairman. No report submitted.

Feb., 1929. Fourteenth annual meeting. F. C. Peterson, chairman. Progress report states that methods are being checked over and revised to date, on clay, talc, agalite, pulp pitch, bleach, bleach sludge, quick lime, hydrated lime, limestone, rosin size, glue, starch, sodium silicate, salt cake and water.[30]

Tentative method for salt cake published.[31] Referred back for later discussion for revision.

A method of testing clay, talc, and agalite published[32] and referred back for further study.

A new method for rosin size analysis published[33] and decided it needs more study.

Feb., 1930. Fifteenth annual meeting. General organization of committee work revised into 7 divisions: management, engineering, raw materials, operating, testing and research and development. The testing division includes four committees: wood testing, paper testing, pulp testing and non-fibrous materials testing. R. C. Griffin, chairman of non-fibrous materials testing committee.[34] No report submitted.

Sept., 1930. Meeting of committee chairmen at Erie, Pa. to discuss reorganization.

It appears from the published records that the only methods proposed by the committee which have ever been formally voted as official by the Association are those voted at the 1919 annual meeting, namely: sulphate of aluminum, sodium chloride, sulphur, coal, daily solutions, cooking acid, bleaching powder, caustic soda, water, rosin and rosin size. This is an unfortunate situation. It is also unfortunate that there appears to be no complete record of the activities of the committee.

There was published in 1924 by this committee a pamphlet "Standard Methods for Testing Materials Used in the Pulp and Paper Industry." This included methods for thirty materials or classes of materials. In the preface it was stated: "Each year the materials testing committee will add to this list and will change the present methods when occasion demands." Since that date various methods have been published in *Paper* but no action appears to have been taken on them and it is very difficult to tell whether a published method is merely a contributed paper or whether it is intended as a method sponsored by the Association or by one of its committees. It would seem that the time has arrived for the Association as a whole to assume responsibility for the methods published by its committees and to bring order out of a somewhat chaotic condition by publishing an official collection of methods recognized by the Association as official or tentative standards. While it is doubtless advisable to segregate the actual preparation of the methods among different committees the results of their work should all be grouped in a unified whole and so published.

The following recommendations are made by the present chairman:

1: That the records of the committee be brought up to date, so far as possible, by following through the methods already worked on and presenting them to the Association for definite action.

2: That before a chairman is allowed to resign he should present to the secretary a written record of the activities of the committee during his chairmanship with full and complete details regarding the status of each and every uncompleted project; and that the secretary furnish the incoming chairman with a copy of this record.

3: That the Association consider the publication in the near future of a book or booklet containing the official and tentative standard methods for use in the pulp and paper industry; this to include all the analytical and testing methods of the Association as prepared by its different committees and approved by the Association.

During the coming year your chairman proposes to bring as many of the methods up to date as possible and to submit them to the association for definite action. To accomplish this important and rather large undertaking the personnel of the committee should be strengthened by the addition of more members who are particularly interested in this work.

R. C. GRIFFIN, *Chairman.*

[19] ibid., VI, 159.
[20] ibid., VII, 35.
[21] ibid., VII, 189.
[22] ibid., VIII, 25.
[23] ibid., VIII, 65.
[24] ibid., IX, No. 1, 225.
[25] ibid., IX, No. 1, 246.
[26] ibid., IX, No. 2, 6.
[27] ibid., X, No. 1, 257.
[28] ibid., 93.
[29] ibid., 218.
[30] ibid., XII, 48.
[31] ibid., 187.
[32] ibid., 69.
[33] ibid., 88.
[34] ibid, XIII, 301.

POWER PLANT SECTION

REDUCING POWER COSTS THROUGH UNIT TREATMENT

Conducted by **Reginald Trautschold Consulting Engineer**

Water in Steam Generation

II—Proper Treatment and Steam Purification *

The effectiveness with which the so-termed "self treatment" system (see PAPER TRADE JOURNAL, Aug. 20, 1931) of boiler water conditioning functions is demonstrated in no better manner perhaps than by the citation of the plain cold facts as reported. It is authentically stated, for instance, that in the many installations of the system made to date, the boilers have all been kept thoroughly clean, free from mud and scale accumulations, and not a single case of caustic embrittlement has developed, or even threatened. Clean steam has been generated. There has been no need to turbine any of the boiler tubes and no objectionable foaming of the boilers has taken place.

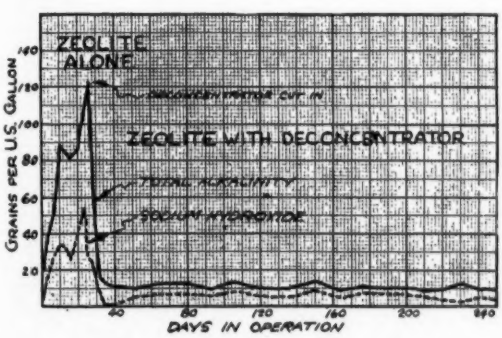
Operating Results

Typical of these very favorable operating results are the attainments in connection with an application to a 150 horsepower boiler operating at a pressure of 125 pounds per square inch that was kept under continuous observation for a period of over eight months. During the first four weeks of this inspection run, the former practice of feeding the boiler exclusively with zeolite softened water was retained, but for the rest of the time a sludge deconcentrator with raw water boiler feed was used, with the zeolite water softener utilized simply to provide the limited amount of softened water needed for the "self treatment" of the raw water fed to the boiler.

Pertinent statistics concerning the concentration of alkalinity developed in the boiler water throughout the entire eight months of observation are shown in graph form on the accompanying charts. Starting with a boiler water alkalinity of 16 grains per gallon (U. S.), the total alkalinity of the boiler water reached a concentration of 84 grains per gallon by the end of the second week. This occurred while the zeolite softened water alone was used to feed the boiler. A heavy blow-down was then instigated and raw hard water added to bring the water in the boiler up to the proper level, resulting, however, only in a moderate lowering of the boiler water alkalinity. During the fourth week, the alkalinity attained a concentration of 121 grains and the free caustic, the concentration of which follows closely the total alkalinity, reached 53 grains per gallon.

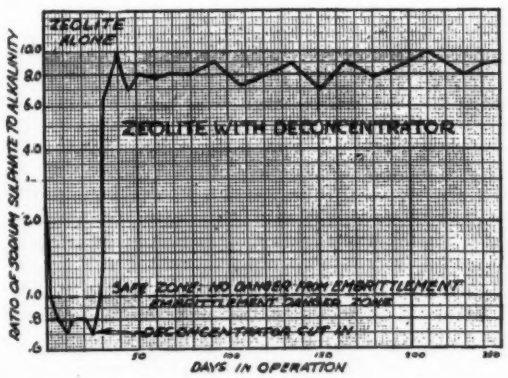
At the end of the fourth week, the sludge deconcentrator was placed in service and raw hard water alone was used for make-up until the boiler water alkalinity was reduced to about 20 grains per gallon, a matter of two or three days. A mixture of a relatively small amount zeolite softened water, just enough to maintain the alkalinity at about 10 grains per gallon, and raw hard water was then used for make-up. With a suitable alkalinity established and automatically maintained by means of the sludge deconcentrator, the boiler water was kept in good chemical balance during the entire balance of the period the boiler

* For previous discussions dealing with boiler water treatment see Paper Trade Journal, April 5, 1928, Feb. 14 and April 11, 1929, May 15, 1930, and Aug. 20, 1931.



Courtesy: Elgin Softener Corp. FIG. 1

Alkalinity concentration during 8-month run of 150 h.p. boiler, using zeolite treated feed alone and a mixed feed of zeolite and raw waters.



Courtesy: Elgin Softener Corp.

FIG. 2

Sulphate-carbonate ratios maintained during 8-month run of 150 h.p. boiler, with zeolite water feed alone and operation with deconcentrator in service.

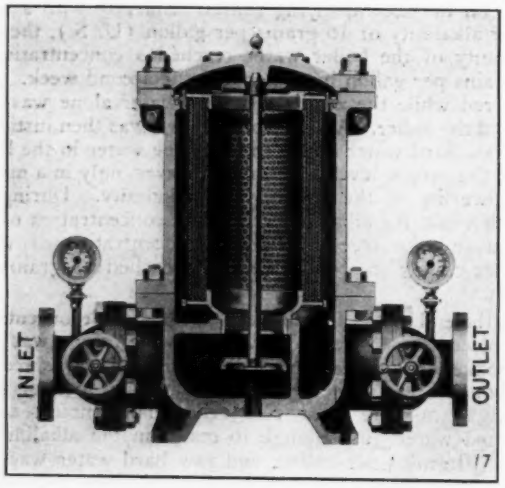
was under observation, a matter of some thirty-one weeks, with the alkalinity low and a reduction in blow-down of about 60 per cent.

The second chart shows the sulphate-carbonate ratios, the ratios of the sodium sulphate content to the total alkalinity, for the entire period of eight months and these also disclose some very interesting points. During the first four weeks, when softened water alone was used for make-up, the ratio was, except for the first day while the boiler alkalinity was building up, below 1 to 1, most of the time considerably below, the average value being around 0.8 to 1. As soon as the sludge deconcentrator cut in, however, the sulphate-carbonate ratio promptly jumped to 6.5 to 1, with straight raw hard water make-up, and then to 10 to 1 with the initial proportioned mixture of soft and hard waters. Following this, the ratio continued high with the mixed water make-up, averaging well over 8 to 1. The difference between this balance and that when the softened water alone was used for make-up is certainly striking.

A sulphate-carbonate ratio of *at least 1 to 1* is specified by the *A. S. M. E. Boiler Code* as being required for boilers operating at pressures up to 150 pounds per square inch, in order to avoid all danger of caustic embrittlement, indicating that during the first four week operating conditions were none too safe. In this particular instance, the boiler operating at only 125 pounds, the danger was probably not great, for at that pressure a sulphate-carbonate ratio of somewhat less than 1 to 1 doubtless affords adequate protection against embrittlement. Under the circumstances, the danger, if any existed, was potential rather than present. With the sludge deconcentrator in service, however, the sulphate-carbonate ratio assumed such proportions that absolutely no question of embrittlement could arise, even were it feasible to operate the boiler at a very much higher pressure, at a pressure, in fact, as high as any as yet attempted in a commercial steam plant.

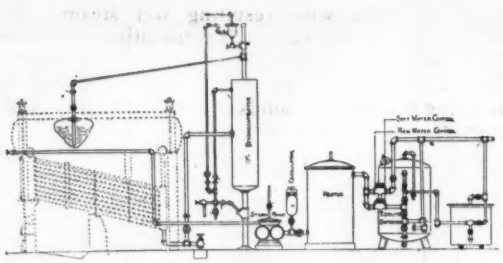
Effectiveness in Deconcentration

A concrete example of the effective results obtained with the deconcentrator in boiler water purification, well worthy of note, is disclosed by the attainments in a test run of about three months on a 1,000-horsepower boiler of the bent tube variety, with proper chemical equalibria maintained within the boiler under expert supervision. The water supply, during the test as well as customarily, is



Courtesy: Elliott Co.

FIG. 4
Sectional view of filter and grease extractor showing perforated spool core and layers of filter cloth and spacer mat.



Courtesy: Elgin Softener Corp.

FIG. 3
Typical arrangement of sludge deconcentrator and zeolite softener assemblage.

river water running pretty high in total hardness and carrying considerable amounts of suspended solids; the total hardness ranging from 8 to 22 grains per gallon, the total dissolved solids from 10 to 30 grains, and suspended matter at times exceeding 200 parts per million.

The boiler was operated at an average load of 200 per cent. of rating, developing 2,000 horsepower at a working steam pressure of 320 pounds per square inch, and operating conditions were such that the feed water consisted entirely of raw water, no condensate being available. Analysis of the raw water that had to be used for feed indicated approximately 90 per cent. carbonate hardness and 10 per cent. sulphate hardness.

Using this water for boiler make-up, the deconcentrator removed some 22,000 pounds (11 tons) of sludge created in the boiler in a little less than three months. While this was being done, incidentally, the total solids concentration in the boiler water never exceeded 66 grains per U. S. gallon and averaged only 40. The sodium hydroxide, soda ash, concentration reached a maximum of 7.5 grains per gallon, but the average caustic content was a matter of only 1.76 grains per gallon. These results were secured by using an internal balanced treatment applied to the boiler water and proportioned according to carefully conducted chemical test.

Proper Treatment

This deconcentration of the boiler water, the suspended solids being removed positively and continuously, serves primarily to keep the boiler clean and in good operating condition, besides which a definite chemical balance is established and maintained. The caustic alkalinity is sensitively controlled as well, kept adequate and at the same time low, with the result that a safe and proper sulphate-carbonate ratio presents no difficulties.

It is vitally important, however, to maintain within the boiler a *correct*, as well as definite, chemical balance and to control the equalibria by means of tests of the *boiler water*. The source from which the necessary chemicals are provided, even to some extent the chemicals themselves, is really of quite secondary importance, provided the reagents employed are suitable and safe for the water and for the steaming conditions under which the evaporation takes place. It is essential, however, that the chemical treatment of the boiler water be carried to the point, and only to the point, where scale formation is prevented.

Over-treatment of the boiler water is never economical and it may be quite dangerous. The chances are that excess alkalinity will result, building up a high caustic concentration within the boiler, which, in the absence of an adequate quantity of sulphate or other suitable inhibitive agent, or of costly, wasteful and often ineffective blow-downs, establishes a condition that may lead to embrittlement of the boiler plate. Another danger, frequentiy attributable to the over-treatment of the boiler water, is a

form of foaming, with resulting wet steam. This is especially liable to occur under conditions of overload, when the need for satisfactory steam is intensified. This foaming failing, common to many boilers, is due, not so much to the presence of solids in the water as is still quite commonly believed, but to an over-concentration of soluble salts, the result in many cases of over-treatment.

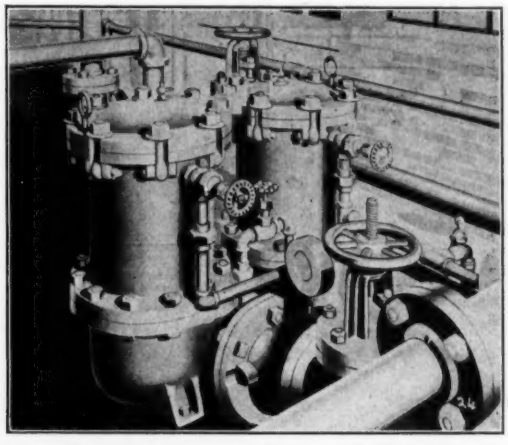
Oil and Grease Extraction

The presence of excess soluble salts in the boiler water, which is preventable by proper treatment of the boiler water and controllable by suitable deconcentration methods, is not the only cause, however, of boiler foaming. Oil entering the boiler with return condensate, in some cases in the raw water, may be responsible for trouble of this character, as well as for other serious difficulties. Oil or grease of vegetable or animal origin saponifies in the presence of a caustic condition in the boiler, sometimes causing a serious foaming condition. Oil containing vegetable or animal fat may also break down to an acid under heat and pressure, causing pitting and corrosion.

Still another of the numerous evils attendant to the presence of oil in the boiler is that it will unite with suspended mineral salts in the water to form a heavy scale and in many cases forms sludge salts which would not otherwise accumulate in the boiler. The heavy resulting scale is particularly objectionable and is a cause of a large percentage of boiler failures. It is a non-conductor of heat and when deposited on the water side of boiler tubes and sheets causes localized over-heating. If a mineral oil, the scale deposition on the boiler may also carbonize, seriously weakening the boiler plates or tubes.

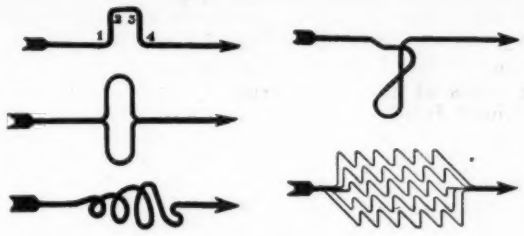
Oil or grease in a boiler can do more damage, in fact, than almost any other impurity liable to get into the boiler, for even if the formation of objectionable compounds is avoided and saponification presents no serious complications, an oil film may form over the entire inner boiler surface, separating the water from the heating surfaces. Such a film is a highly efficient heat insulator and seriously interferes with the rate of heat transfer through the boiler tubes, reducing the efficiency of the steam generator and subjecting the boiler metal to damaging over-heating.

Filters and grease extractors, consequently, are often essential pieces of equipment for the extraction of oil and grease from the boiler water supply, as well as for the clarification of the water by filtering out organic matter, sediment, etc. They must be highly efficient, however, to be entirely satisfactory, for any small proportion of the oil passing through the filter may be decidedly objectionable. Unless the filter traps and removes all the oil, it is only a question of time before trouble develops and an oil problem is interjected into the proper treatment of the boiler water, for the oil is bound to concentrate in one form or another in the water of an active boiler.



Courtesy: Elliott Co.

FIG. 5
Typical installation of twin type grease extractor filter.



Courtesy: Cochrane Corp.

FIG. 6
Steam paths through different types of steam separators.

The removal of all the oil is an exacting task in fact that in approved varieties of modern oil extraction filters can be consummated with any success only by filtering and refiltering the contaminated water several times, customarily employing terry filter cloth to enmesh the small globules of oil. In some of these approved filter constructions, a series of removable filter screens, or cartridges, each encased in a filter cloth envelope, is employed, through which the water flows successively, the various filter screens being interchangeable and replacable as cleaning demands may dictate. In another form of filter, the terry cloth is wound in separate layers upon a perforated spool core, with a spacer mat between the individual layers, to form a compact, large area, filter element which is inserted in a suitable filter chamber.

This latter variety of oil extraction filter is made in single and twin constructions, containing one or two filter chambers respectively. In the single filter chamber construction, the water of necessity is by-passed about the filter element when the filter has to be cleaned. For this reason, the use of filters of this general description is limited to services where the water supply is of such character that the inflow of water can be arrested for the brief period required to change filter elements or where the inflow of unfiltered water during the short time required to clean the filter does no particular damage. Where a continuous flow of filtered water has to be maintained, on the other hand, the twin filter construction with two filter chambers has to be employed, one of which is always in service and the other held in reserve for use when its mate has to be cut out for cleaning.

In plants where the sludge deconcentrator is employed for the essential control over the insoluble concentrations that accumulate within the boiler, as described in these columns August 20, 1931, the same efficient impurity removing device proves highly effective in removing any last trace of oil that may have passed through the equipment provided for the extraction of oil from the boiler water supply and reaches the boiler. Coagulation of the small quantity of oil is effected and the oil is removed with the other insoluble salts and solid concentrates by the deconcentrator.

Steam Purifiers and Separators

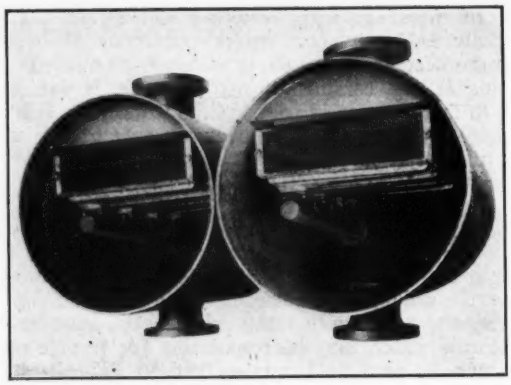
Boilers supplied with water that has been subjected to proper treatment and kept in correct chemical balance, as well as effectively freed from objectionable concentrations of insolubles, are not apt to foam under normal operating

conditions. The delivered steam should be dry, of high quality, and there should be no great need for steam purifiers, or separators. However, a sudden demand for steam and marked fluctuations in boiler load and water level may cause even the best of waters to be carried over with the steam, and wet steam may be responsible for no little damage to the steam driven equipment. Boiler capacities may be considerably reduced and the attainment of high operating efficiencies sharply restricted. Under such circumstances, an efficient steam purifier, or steam separator, becomes a profitable and highly desirable adjunct in the treatment and control of water in steam generation.

These devices, now quite generally familiar, employ baffles, screens, grids and various arrangements of deflecting plates for literally "scrubbing" the water and foreign matter from the steam. Water, oil and virtually all the entrained impurities which may be carried along with the wet steam are all much heavier than the steam itself and will precipitate out if the free flow of the steam is interrupted by deflections in its direct path. For this reason, the well designed mechanical purifier, or separator, is a highly efficient device.

As several varieties of steam purifiers have already been featured in these columns, it would seem unnecessary to enlarge on the mechanical details of the various forms of approved equipment of this character. It might be well, however, to classify the devices in general as of one of two basic varieties, internal and external purifiers. The former are located within the steam drum of the boiler, while the latter may be located almost anywhere, though usually in close proximity to the steam generator. If the boiler is equipped with a superheater, the purifier is advisedly placed between the boiler and the superheater, while in the saturated steam plant the usual arrangement is to place the purifier in or connected to the main steam header.

The use of steam purifiers in plants generating superheated steam is particularly desirable, as removing the moisture from the steam before it enters the superheater coils proves a decided economy. It is estimated that each 1 per cent. of moisture extracted from the steam before it is subjected to excess heating effects an increase in superheat of approximately 16 degrees Fahrenheit. Furthermore, drying and cleaning the steam in advance of its admission to the superheater prevents such important accessory from becoming clogged or fouled. Clean, dry steam for the turbines is also a consideration of major



Courtesy: Blaw-Knox Co.

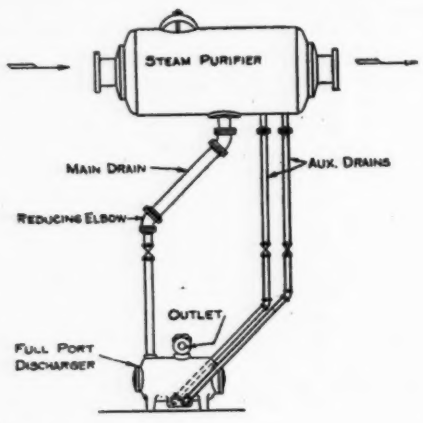
FIG. 7

External type steam purifiers with drum head removed to show methods of draining the purifier elements.

importance and the additional superheat betters the turbine efficiency, an increase of 11 or 12 per cent. in superheat effecting an increase in turbine efficiency of about 1 per cent. Reblading is required much less frequently and the common increase in water rate caused by the cutting and eroding of the turbine blades is prevented.

A distinctive advantage of employing an efficient steam purifier of the external type is that in some systems of boiler water conditioning the chemical treatment of bad water can be carried somewhat further, in order to prevent scale formation. This particular point was well demonstrated at a paper mill near Philadelphia, Pa., where the decidedly impure water from the Schuylkill River is used in the boilers.

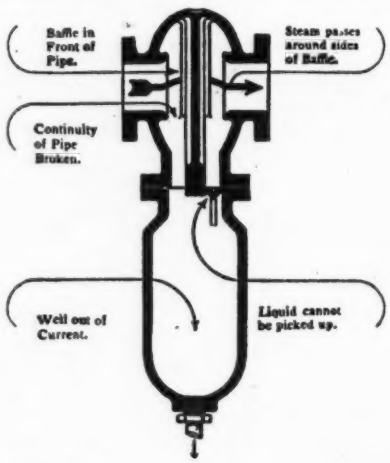
This water is treated at this plant by a combination process to prevent scale formation in a battery of boilers aggregating in rated capacity some 1,500 horsepower and producing a maximum of 60,000 pounds of steam an hour. Due to the method of chemically treating the boiler water and to excessive, unavoidable variations in the water levels of the boilers, considerable priming and foaming results. So much so, in fact, that it has not always been feasible to use as much chemical as desirable for preventing the formation of scale. The priming and foaming, attributable to a considerable extent to the chemicals added to the



Courtesy: Cochrane Corp.

FIG. 8

External type steam purifier showing standard connections to purifier drainage trap.


Baffle in Front of Pipe.
Steam passes around sides of Baffle.
Continuity of Pipe Broken.
Well out of Current.
Liquid cannot be picked up.

Courtesy: Cochrane Corp.

FIG. 9

Diagrammatic view of horizontal steam separator.

STEAM PURIFIER TEST AT PLANT EMPLOYING HEAVILY TREATED SCHUYLKILL RIVER WATER FOR BOILER FEED

Determination	Moisture content of steam — Before purifier	After purifier
1	0.25%	0.00%
2	0.60	0.08
3	0.35	0.08
4	0.45	0.10
5	0.50	0.10
6	0.80	0.05
7	1.20	0.00
8	1.35	0.00
9	2.85	0.00
10	1.90	0.05
11	2.00	0.00
12	2.75	0.05
13	4.35	0.00
14	2.65	0.05
Average	1.57%	0.04%

Cochrane Corp.

water, gave much trouble from wet steam in the engine cylinders and from the rapid accumulation of dirt on the blades of the steam turbine, the latter being particularly objectionable as the Schuylkill River carries a good deal of coal dust contamination.

The plant is not equipped with superheaters and all the steam is collected into one large main, an arrangement which made it possible to pass the entire steam supply through a single steam purifier, with very satisfactory results. In fact, the outcome of the application has been that all these troubles have been pretty well overcome and substantially dry, clean steam for the power plant and mill secured. This, in spite of the fact that at times the priming and foaming are so heavy that the trap draining the purifier discharges almost continuously. Just how effectively the steam purifier does extract the moisture from the steam shown in the above recorded findings of the throttling calorimeter during a test entailing fourteen carefully computed determinations.

The effectiveness of the steam purifier was evidenced further by the fact that while samples of the boiler blowdown and of the trap discharge were greatly discolored, almost black, due to the presence of coal dust carried in suspension in the water, the condensate from a sampling pipe located in the discharge from the purifier was crystal clear. A chemical analysis of the waters from these three sources showed 18 grains of sodium chloride per gallon in the boiler water, 8 grains per gallon in the trap discharge and only a trace, too small to be measured, in the condensate from the purifier outlet.

It is results such as these which have had much to do with the installation of small, compact steam purifiers in steam lines and for handling the exhausts from turbines, heaters, etc., in all of which services excellent results have been secured in removing water, oil and other impurities from the steam and condensate. These applications are more concerned, however, with considerations that are somewhat foreign to the purification of the water supply for steam generation. Much the same may be said regarding the use of numerous other boiler and steam plant accessories, separators of one kind or another, even of deareating equipment used commonly with feed water heaters, though the use of deareating equipment may be of vital concern in conditioning the boiler water.

A consideration of these less pertinent devices, less pertinent only from the viewpoint of conditioning the feed water supply, is very essential, of course, but the present discussion aims simply to show that the proper conditioning of boiler water is a matter that is really subject to exact control. Each boiler plant, each separate boiler, presents an individual problem, it is quite true, but the problem can be successfully solved, and with considerable profit.

The proper chemical balance can be established in the individual boiler and so maintained with approved control equipment now on the market. The result is, that no paper mill need longer be burdened with excessive expenses in boiler plant upkeep and operation and, it is pretty safe to say, almost every mill can investigate to very good advantage the possibilities of bettering its system of conditioning the water entering each of its steam generators.

J. T. Wolohan Retires from American Writing

HOLYOKE, Mass., September 1, 1931.—John T. Wolohan assistant secretary for the American Writing Paper Company, Inc. has resigned effective today after 50 years of business life. It had been his plan to retire after he had spent 50 years in business.

Mr. Wolohan was born in West Warren, Mass. coming to Holyoke when a boy and was educated in the public schools. He first entered the paper business in 1885 after serving in business various ways for a few years and spent five years in the jobbing branch of the business. He was advanced to traveling salesman. In 1898 he joined the Beebe & Holbrook Paper Company as traveling salesman, and when the American Writing Paper Company was organized shortly after, he was retained as salesman for that organization. He became successively manager of the company's Buffalo, N. Y. office, executive manager of the New York office, general sales manager, and vice president in charge of sales until the receivership of the company in 1923. Upon the reorganization of the Company in 1927 he was elected assistant secretary which office he held until the present time.

Mr. Wolohan was practically the only one of the former executives to be retained under the present President Sidney L. Willson. Mr. Willson in commenting upon Mr. Wolohan's retirement said: "During our close business relations covering the past eight years, he has been not only a valuable business associate but an intimate personal friend—and while I shall not have the benefit of his service as my business associate I shall still hope to continue those personal relations from which I have derived so much personal pleasure. No man connected with our Company has been more loyal—his every effort was for the Company—and characteristic of him; it was impersonal and unselfish—and no one could have more reason to wish him contentment during the balance of life's journey than I have—and that certainly is my wish and I know it is shared in by all of his present and past associates."

Chicago Paper Market Irregular

CHICAGO, Ill., August 31, 1931.—Results of the reported cut in book paper prices constitute the chief topic of discussion in Chicago paper houses. Firms allied with the book trade are making adjustments on a cut that, in one instance, ran close to two cents on one grade, say reports.

The unsettled price situation has also backed up on to the news print market and caused some shakiness of non-contract orders. Other lines have failed to change much in either direction during the past week. Some fine paper representatives report better business in August than in July and there is a continued tendency to expect some sort of an upturn in the Fall.

Conditions in the board market, as evidenced by local reports, continue unsatisfactory with, however, renewed efforts on new uses having some effect on demand even at this early date. Kraft prices continue stable and the local jobber is going ahead in a determined effort to line up fall business. Demand is slow and spotty. Glassines are reported dull. Ground woods are also said to be weak in this vicinity. Waste markets are reflecting the late summer dullness and the inactivity of other markets.

ANNUAL CONFERENCE OF HAMMERMILL AGENTS

(Continued from page 21)

Lehigh Valley Paper House, C. E. Barnes and Harry Lefkowith, Allentown, Pa.

S. P. Richards Paper Company, W. A. Rhodes, Atlanta, Ga.

The Baxter Paper Company, Wiley M. Baxter, Jr. and Harold E. Whitaker; O. F. H. Warner & Co., Douglas, Warner, Baltimore, Md.

Carter, Rice & Co., H. L. Carter and R. H. Welsh; Stoors & Bement Company, W. N. Stetson, Boston, Mass.

The Alling & Cory Company, M. L. Kratz; Holland Paper Company, Inc., Fred Stutzman, W. R. Grazelle, Willard J. Blake and W. H. Howe, Buffalo, N. Y.

Bradner Smith & Co., Richard S. Bull; Swigart Paper Company, Chicago Paper Company, W. M. Gillett, Herbert Montgomery and John D. Swigart, Chicago, Ill.

The Diem & Wing Paper Company, A. L. Schneider, Cincinnati, Ohio.

R. D. Wilson Sons & Co., Calvin Wilson, Clarksburg, W. Va.

The Petrequin Paper Company, E. A. Petrequin Paper Company, E. A. Petrequin and E. J. Petrequin; The Alling & Cory Co., J. E. Alcorn, Cleveland, Ohio.

The Central Ohio Paper Company, A. M. Miller, Columbus, Ohio.

Beecher, Peck & Lewis, R. W. Roehm, G. A. Naumann and H. J. Tilney, Detroit, Mich.

The John Boshart Paper Company, John Boshart, Duluth, Minn.

The Daka Paper Company, F. Dana Payne, J. H. Bliss, Edward Selden; Durico Paper Company, P. M. Duggan, G. J. Kuebel, J. M. Knablein and H. S. Wuenschel, Erie, Pa.

Western Paper Company, Roscoe Taylor, Fort Wayne, Ind.

Carpenter Paper Company, L. V. Mulnix, Grand Rapids, Mich.

Johnston Paper Company, H. G. Keffer, Harrisburg, Pa.

Crescent Paper Company, E. P. Magel; Central States Envelope Company Division, F. L. Fisher, Indianapolis, Ind.

Jackson Paper Company, H. T. Newell, Jackson, Miss.

Kansas City Paper House, J. A. Carpenter, Kansas City, Mo.

Miller Paper Company, Inc., W. C. Merzwiler; Southeastern Paper Company, H. E. Harris and W. D. Williams, Louisville, Ky.

Caskie Paper Company, Inc., G. E. Caskie, Jr., Lynchburg, Va.

Tayloe Paper Company, A. D. Tayloe, Memphis, Tenn.

The E. A. Bouer Company, W. J. Herrmann and E. R. Uphoff, Milwaukee, Wis.

The John Leslie Paper Company, Frank P. Leslie, Minneapolis, Minn.

Clements Paper Company, R. M. Clements, Nashville, Tenn.

E. C. Palmer & Co., Ltd., A. D. Cleveland, New Orleans, La.

Beckman Card & Paper Company, Inc., Max Greenebaum; F. A. Flinn, Inc., A. C. Thomas; Henry Lindenmeyr & Sons, Walter Stuart; Union Card & Paper Co., Jake Nacht; Paul E. Vernon & Co., A. C. Damon; The Alling & Cory Company, D. S. Landau; Green, Low & Dolge, Inc., O. A. Dolge; American Paper Exports, Inc., D. F. McIntosh; Foreign Advertising and Service, Maurice Pereles; Batten, Barton, Durstine & Osborn, C. J. Babcock and W. E. Palmer; Walden, Sons & Mott, C. C. Walden, Jr., New York City.

The Old Dominion Paper Company, R. S. Johnston, Norfolk, Va.

Carpenter Paper Company, I. W. Carpenter, Jr.; Western Paper Company, J. B. Jones, Omaha, Neb.

Paper Merchants, Inc., Ormond Freile, Winfield Predmore and J. G. Seckel; D. L. Ward Company, G. W. Ward; S. Walter, Inc., Simon Walter, Philadelphia, Pa.

The Alling & Cory Co., Alan Chandler, Pittsburgh, Pa.

Irwin Paper Company, Leaton, Irwin, Quincy, Ill.

Van Reed Paper Company, C. R. Smith, Reading, Pa.

Epes-Fitzgerald Paper Company, Inc., T. H. Epes; Richmond Paper Co., Inc., Ernest C. Mead, Richmond, Va.

The Alling & Cory Co., B. E. Reeves, Rochester, N. Y.

Beacon Paper Company, G. F. Schall; Mack-Elliott Paper Company, C. M. Bleke, St. Louis, Mo.

Zellerbach Paper Company, W. R. McWaters, San Francisco, Cal.

Megargee Brothers, Philip P. McHugh, Scranton, Pa.

The Capital City Paper Co., Byron Gaines, Springfield, Ill.

P. P. Kellogg & Co., Inc., E. L. Wood and F. B. Korbel; United States Envelope Company, R. L. Allison and E. V. Johnson, Springfield, Mass.

Springfield Paper Company, G. Ross Likins, Springfield, Mo.

Troy Paper Corporation, J. D. Keating, Troy, N. Y.

R. P. Andrews Paper Company, W. N. Schaefer and R. P. Andrews, Washington, D. C.

National Envelope Company, C. T. Ross, Waukegan, Ill.

Andrews Paper House, B. R. Moore, York, Pa.

Dilts Advertising Complimented

When the readers of a trade publication, who represent the buying powers of its industries, request that advertisements of its advertisers be republished because they carry a message that should be reread and emphasized, it certainly is an exceptional compliment to the advertiser, his advertisements, and the publication in which they appear.

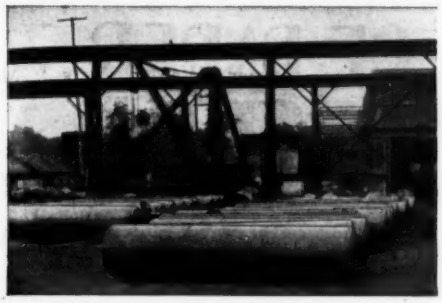
In this week's issue of the PAPER TRADE JOURNAL there appears the first of a series of advertisements of the Dilts Machine Works which ran in its columns about one year ago. This series of advertisements are being printed for the second time because of requests this advertiser has received from buyers in the pulp and paper industries.

These advertisements concisely tell the story of the merits of the products of this manufacturer, their typography is most attractive, and the message conveyed has undoubtedly left an indelible impression on the minds of those responsible for the buying of mill equipment.

Crown Zellerbach Dividend Is Voted

SAN FRANCISCO, August 27, 1931.—Directors of Crown Zellerbach corporation cleaned up the balance due in dividends of the A and B preference stock with a dividend of 75 cents a share, ordered paid September 1 on records of August 13.

The directors had declared a previous dividend of 75 cents a share on these stocks, which was paid June 1, in lieu of the regular $1.50 quarterly rate. Dividends on the shares are cumulative. The regular dividend of $1.50, due September 1, is yet to be acted upon.



Consult Downingtown First
for modern Steel Plate Work

NOTE: Have you sent for your copy of the booklet, "Corrosion Resistant Alloys in General Fabrication?" It is authoritative—written by T. Holland Nelson, distinguished metallurgical engineer.

The chances are, that upon consulting Downingtown *first* for modern steel plate work that you won't be forced to go further.

For Downingtown "has everything" including ideal location for raw materials, railroad facilities for *prompt* deliveries, a modern plant, expert and experienced engineers . . . and a reasonable price for the quality you receive . . .

We are equipped to make virtually any shell, shape, tank, vat, digestor, etc., that you require, of ordinary carbon steel, chromium iron alloys, 18 & 8, Everdur, and nickel-clad steel. CONSULT US FIRST!

DOWNINGTOWN IRON WORKS
Pioneers in Chrome — *Iron Fabrication*

AMIJEL

AMIJEL is not an ordinary beater starch—it is a specially processed, pure gelatinized starch—ready for use. Does not have to be cooked. Just add in dry form to the beater.

CORN PRODUCTS REFINING COMPANY
17 Battery Place, New York City

EXTENSION MODEL

Cambridge Surface Pyrometer

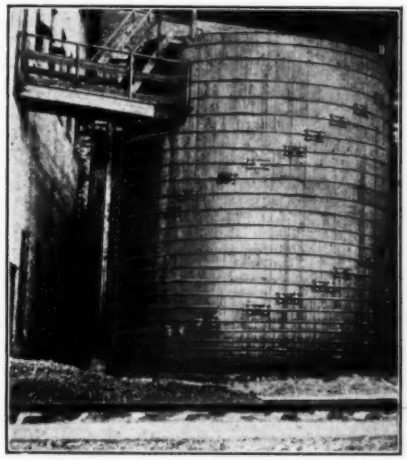
is an instrument which applied to the surface of a dryer or calender roll, instantly indicates the exact surface temperature. Its use enables the operator to locate water logged rolls and to maintain every roll at the correct temperature for efficient progressive drying.

The instrument is compact, rugged and easy to read. The extension rod permits temperature checking across the entire roll. Scale ranges are 50-250° and 50-400°F.

Send for List No. 194-P.T.

CAMBRIDGE INSTRUMENT CO., INC.
3512 GRAND CENTRAL TERMINAL, NEW YORK

TANKS THAT LAST



Acid tank at Nekoosa-Edwards Paper Company, Pt. Edwards, Wis.

Kalamazoo tanks are made of best obtainable tank woods, built right, guaranteed tight.

Sixty years experience building Blow Pits, Acid Tanks, Stuff Chests, Agitators, etc., for the Paper Trade.

Ask about our new Tile Tanks for stock or bleach.

Kalamazoo Tank & Silo Co., Kalamazoo, Mich.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING AUGUST 29, 1931

SUMMARY

Cigarette paper	63 cs.
Wall paper	13 bls., 25 cs.
Paper hangings	1 bl., 25 cs.
News print	1203 rolls
Printing paper	42 cs.
Wrapping paper	2 bls., 8 cs.
Drawing paper	4 cs.
Filter paper	9 cs.
Bristol boards	1 cs.
Transfer paper	4 cs.
Tissue paper	19 cs.
Coated tissue	1 cs.
Surface coated paper	70 cs.
Baryta coated paper	10[illegible] cs.
Basic paper	10 cs.
Metal coated paper	[illegible] cs.
Photo paper	6 cs.
Coated paper	21 cs.
Colored paper	4 cs.
Envelopes	[illegible] cs.
Decalcomania paper	15 cs.
Note paper and envelopes	[illegible] cs.
Writing paper	11 cs.
Cover paper	1 cs.
Lapis paper	1 cs.
Card board	13 rolls, [illegible] cs.
Paper board	19 cs.
Paste board	15 cs.
Miscellaneous paper	444 rolls, 287 bls., 128 cs.

CIGARETTE PAPER

Standard Products Corp., De Grasse, Havre, 30 cs.
Brown & Williamson Tobacco Co., De Grasse, Havre, 6 cs.
Champagne Paper Corp., De Grasse, Havre, 3 cs.
Champagne Paper Corp., Ile de France, Havre, 4 cs.
Brown & Williamson Tobacco Co., Ile de France, Havre, 9 cs.
Brown & Williamson Tobacco Co., Olympic, Southampton, 10 cs.
G. W. Beal, City of Fairbury, Gdynia, 1 cs.

WALL PAPER

Heesmoth Basse & Co., Berlin, Bremen, 1 cs.
R. Fingst, Europa, Bremen, 1 cs.
W. H. S. Lloyd & Co., Rotterdam, Rotterdam, 3 cs.
R. F. Downing & Co., Olympic, Southampton, 2 cs.
Kensington Wallpaper Co., Mauretania, Southampton, 1 bl.
Hudson Forwarding & Shipping Co., Mauretania, Southampton, 1 cs.
Guaranty Trust Co., A. Ballin, Hamburg, 12 cs.
Globe Shipping Co., A. Ballin, Hamburg, 3 bls.
F. J. Emmerich, A. Ballin, Hamburg, 8 bls., 1 cs.
Heemsoth Basse & Co., A. Ballin, Hamburg, 1 bl.
G. J. Hunken Inc., Karlsruhe, Bremen, 4 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., Minnewaska, London, 1 cs., 1 bl.
Whiting & Patterson Co. Inc., Minnewaska, London, 2 cs.
Atlantic Forwarding Co., De Grasse, Havre, 3 cs.
Hudson Forwarding & Shipping Co., Ile de France, Havre, 19 cs.

NEWS PRINT

Jay Madden Corp., Berlin, Bremen, 438 rolls.
Perkins Goodwin & Co., Berlin, Bremen, 42 rolls.
Stora Kopparberg Corp., Kungsholm, Gothenburg, 51 rolls.
——, A. Ballin, Hamburg, 200 rolls.
Jay Madden Corp., Pres. Harding, Hamburg, 179 rolls.
Lunham & Reeve, Ragnhildsholm, Kotka, 293 rolls.

PRINTING PAPER

Whiting & Patterson Co. Inc., Minnewaska, London, 2 cs.
Borden Riley Paper Co., Berlin, Bremen, 5 cs.
T. N. Fairbanks Co., Excalibur, Genoa, 35 cs.

WRAPPING PAPER

F. C. Strype, Westernland, Atnwerp, 1 cs.
——, Westernland, Atnwerp, 2 cs.
Borden Riley Paper Co., Berlin, Bremen, 5 cs.
Japan Paper Co., Gripsholm, Gothenburg, 2 bls.

DRAWING PAPER

H. Reeve Angel & Co. Inc., Minnewaska, London, 3 cs.
Keuffel & Esser Co., Minnewaska, London, 1 cs.

FILTER PAPER

H. Reeve Angel & Co. Inc., Minnewaska, London, 9 cs.

BRISTOL BOARDS

Keuffel & Esser Co., Minnewaska, London, 1 cs.

TRANSFER PAPER

Fuchs & Lang Manfg. Co., Pres. Harding, Hamburg, 4 cs.

TISSUE PAPER

Old Masters Paper & Pulp Corp., Pres. Harding, Hamburg, 14 cs.
——, Conte Biancamano, Genoa, 5 cs.

COATED TISSUE

W. J. Byrnes, Olympic, Southampton, 1 cs.

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Gevaert Co. of America, Westernland, Antwerp, 70 cs.

BARYTA COATED PAPER

Globe Shipping Co., Berlin, Bremen, 63 cs.
Globe Shipping Co., Karlsruhe, Bremen, 40 cs.

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Globe Shipping Co., Berlin, Bremen, 10 cs.

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K. Pauli Co., A. Ballin, Hamburg, 6 cs.

PHOTO PAPER

J. J. Gavin, Olympic, Southampton, 4 cs.
J. J. Gavin, Mauretania, Southampton, 2 cs.

COATED PAPER

Bank of America Natl Assn., A. Ballin, Hamburg, 4 cs.
Happel & McAvoy, A. Ballin, Hamburg, 17 cs.

COLORED PAPER

F. B. Vandegrift & Co., Berlin, Bremen, 4 cs.

ENVELOPES

Globe Shipping Co., A. Ballin, Hamburg, 6 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., Britannic, Liverpool, 5 cs.
C. W. Sellers, Europa, Bremen, 7 cs.
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NOTE PAPER AND ENVELOPES

R. F. Downing & Co., Britannic, Liverpool, 6 cs.

WRITING PAPER

American Express Co., Mauretania, Southampton, 1 cs.
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G. Innes, Lorain, Havre, 1 cs.

COVER PAPER

International F'd'g Co., A. Ballin, Hamburg, 1 cs.

LAPIS PAPER

——, Olympic, Southampton, 1 cs.

CARD BOARD

Gevaert Co. of America, Westernland, Antwerp, 4 cs.
——, Guido, Antwerp, 13 rolls, 3 cs.
American Express Co., A. Ballin, Hamburg, 37 cs.

PAPER BOARD

Colmar Paper Corp., Westernland, Antwerp, 19 cs.

PASTE BOARD

H. Heide, Inc., Karlsruhe, Bremen, 15 cs.

MISCELLANEOUS PAPER

Iwai & Co., Tokai Maru, Kobe, 2 cs.
Corn Exchange Bank & Trust Co., Tokai Maru, Kobe, 25 cs.
Japan Import & Export Commission Co., Tokai Maru, Kobe, 7 cs.
Hensel Bruckman & Lorbacher, Berlin, Bremen, 7 cs.
Quality Art Novelty Co., Berlin, Bremen, 1 bl., 3 cs.
Leonhardt & Brush, De Grasse, Havre, 2 cs.
F. J. Emmerich, De Grasse, Havre, 2 cs.
Keller Dorian Paper Co., Ile de France, Havre, 3 cs.
The Borregaard Co., Inc., Kungsholm, Gothenburg, 331 rolls, 47 bls.
Kreamer & Co., Kungsholm, Gothenburg, 145 bls.
Walker Goulard Plehn Co., Kungsholm, Gothenburg, 47 bls.
M. M. Cohen, Kungsholm, Gothenburg, 113 rolls, 33 bls.
E. H. Sargent & Co., Kungsholm, Gothenburg, 9 cs.
P. C. Kuyper & Co., A. Ballin, Hamburg, 5 cs.
E. J. Calvin, A. Ballin, Hamburg, 14 bls.
Japan Paper Co., Tai Ping, Kobe, 63 cs.

RAGS, BAGGING, ETC.

J. Cohen & Son, Caronia, Liverpool, 20 bls. paper stock.
M. Snedeker Corp., Caronia, Liverpool, 87 bls. linen cuttings.
Darmstadt Scott & Courtney, Examiner, Malaga, 212 bls. bagging.
Castle & Overton, Inc., Tuscania, Glasgow, 50 bls. rags.
Brown Bros. Harriman & Co., Tuscania, Glasgow, 98 bls. paper stock.
E. J. Keller Co. Inc., Tuscania, ——, 40 bls. rags.
S. Birkenstein & Son, American Trader, London, 135 bls. paper stock.
D. Galloway, Excalibur, Genoa, 63 bls. cotton waste.
R. F. Downing & Co., Rotterdam, Rotterdam, 66 bls. bagging.
G. Schuster, Oriente, Havana, 15 bls. rags.
E. J. Keller Co. Inc., Coahoma County, ——, 63 bls. rags.
Amtorg Trading Corp., City of Fairbury, Leningrad, 180 bls. rags.
C. Nelson, Guido, Hull, 31 bls. rag cuttings.
Katzenstein & Keene, Inc., Guido, Antwerp, 240 bls. rags.
Seidel Herzog & Co. Inc., Guido, Antwerp, 8 bls. bagging.
Bush Service Corp., Guido, Antwerp, 115 bls. bagging.
Darmstadt Scott & Courtney, Guido, Antwerp, 183 bls. bagging.
International Purchasing Co., Guido, Hull, 104 bls. yarns.
Chemical Bank & Trust Co., A. Ballin, Hamburg, 57 bls. rags.
S. Shapiro & Son, Lorain, Dunkirk, 24 bls. rags.
Congoleum Nairn Co., Lorain, Dunkirk, 123 bls. rags.

OLD ROPE

International Purchasing Co., Guido, Hull, 211 coils.
International Trust Co., M. Arnus, Vigo, 203 bls.

CASEIN

T. M. Duche & Son, Southern Prince, B. Ayres, 834 bags, 50040 kilos.

(Continued on page 70)

Cotton and Paper Rolls
Super Calenders
Friction Calenders
Embossing Calenders
Hydraulic Presses and Pumps

Successors to the Granger Foundry & Machine Co.

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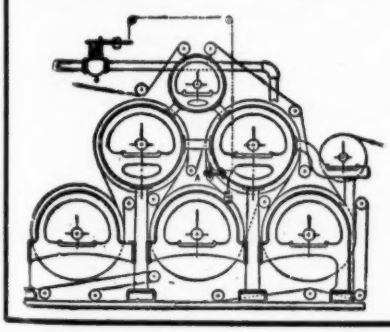

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will do everything we claim for it and more. The test costs you nothing until you are satisfied. Many mills tried one and now have every machine equipped. Write for list of users and other information.

W. F. PICKLES **Buckland, Conn.**

Imports of Paper and Paper Stock

(Continued from page 68)

CHINA CLAY

L. A. Solomon & Bro., Britannic, Liverpool, 280 bags.

WOOD PULP

E. M. Sergeant & Co., Stavangerfjord, Oslo, 150 bls. chemical pulp.

Lagerloef Trading Co., Korsholm, Kemi, 2150 bls. sulphate.

Lagerloef Trading Co., Korsholm, Rauma, 1398 bls. sulphite.

M. Gottesman & Co. Inc., Coahoma County, Rotterdam, 550 bls. wood pulp, 55 tons.

Amtorg Trading Corp., (Albany), City of Fairbury, Leningrad, 2911 cords pulpwood.

Russell McCandless, Kungsholm, Gothenburg, 200 bls. sulphite; 300 bls. chemical pulp.

J. Anderson & Co., Kungsholm, Gothenburg, 500 bls. sulphite.

Parsons & Whittemore, Inc., Kungsholm, Gothenburg, 360 bls. sulphate.

Price & Pierce, Ltd., Kungsholm, Gothenburg, 600 bls. chemical pulp.

Bulkley Dunton & Co., Kungsholm, ——, 1980 bls. wood pulp.

Bulkley Dunton & Co., Pr. Roosevelt, ——, 1000 bls. wood pulp.

Bulkley Dunton & Co., Bird City, ——, 1200 bls. wood pulp.

Lagerloef Trading Co., Ragnhildsholm, Helsingfors, 1247 bls. sulphite; 390 bls. mechanical pulp.

Lagerloef Trading Co., Ragnhildsholm, Wiborg, 340 bls. sulphate; 260 bls. mechanical pulp.

Lagerloef Trading Co., Ragnhildsholm, Kotka, 1009 bls. sulphite.

Castle & Overton, Inc., Ragnildsholm, Wiborg, 606 bls. sulphite.

M. Gottesman & Co. Inc., Ida, Sebenico, 3200 bls. wood pulp.

WOOD PULP BOARDS

Lagerloef Trading Co., Ragnhildsholm, Kotka, 434 bls.

WOOD FLOUR

——, Stavangerfjord, Frederickstad, 755 bags.

A. Kramer & Co., Rotterdam, Rotterdam, 200 bags.

State Chemical Co., Rotterdam, Rotterdam, 500 bags.

State Chemical Co., Coahoma County, Rotterdam, 497 bags, 34890 kilos.

PHILADELPHIA IMPORTS

WEEK ENDING AUGUST 29, 1931

E. J. Keller Co. Inc., Excalibur, Alexandria, 95 bls. rags.

Castle & Overton, Inc., Ragnhildsholm, Wiborg, 288 bls. sulphite.

Lagerloef Trading Co., Ragnhildsholm, Wiborg, 6431 bls. sulphite; 364 bls. sulphate.

Paper Manufacturers Co. Inc., Ragnhildsholm, Kotka, 127 rolls news print.

Lancaster News, Ragnhildsholm, Kotka, 53 rolls news print.

Jay Madden Corp., Ragnhildsholm, Kotka, 46 rolls news print.

Lagerloef Trading Co., Ragnhildsholm, Kotka, 1820 bls. sulphate; 602 bls. sulphite.

Union Waste Co., Tai Ping, Kobe, 25 bls. rags.

J. Rosenberg, Tai Ping, Kobe, 46 bls. rags.

J. Anderson & Co., Ida, Trieste, 1310 bls. wood pulp.

Bulkley Dunton & Co., Simon von Utrecht, ——, 875 bls. wood pulp.

NORFOLK IMPORTS

WEEK ENDING AUGUST 29, 1931

Lagerloef Trading Co., Ragnhildsholm, Helsingfors, 260 bls. mechanical pulp.

Lagerloef Trading Co., Ragnhildsholm, Wiborg, 635 bls. mechanical pulp; 2560 bls. sulphite.

Lagerloef Trading Co., Ragnhildsholm, Kotka, 164 rolls wood pulp boards; 2080 bls. mechanical pulp; 360 bls. sulphite; 1725 bls. sulphate.

BOSTON IMPORTS

WEEK ENDING AUGUST 29, 1931

G. F. Malcolm, Britannic, Liverpool, 1 cs. tissue paper.

Lagerloef Trading Co., Korsholm, Kotka, 1176 bls. sulphate; 468 bls. sulphite.

Lagerloef Trading Co., Korsholm, Kemi, 4840 bls. sulphate.

Lagerloef Trading Co., Korsholm, Rauma, 625 bls. sulphite.

National Sanitary Rag Co., Tokai Maru, Kobe, 88 bls. rags.

Leigh Textile Co., Guido, Antwerp, 22 bls. rags.

Darmstadt Scott & Courtney, Guido, Antwerp, 107 bls. bagging.

American Express Co., Guido, Antwerp, 168 rolls paper.

M. Gottesman & Co. Inc., Ida, Sebenico, 1720 bls. wood pulp.

Bulkley Dunton & Co., East Indian, ——, 875 bls. wood pulp.

Bulkley Dunton & Co., Consul Corfitzen, ——, 1870 bls. wood pulp.

Bulkley Dunton & Co., Bird City, ——, 3000 bls. wood pulp.

HOUSTON IMPORTS

WEEK ENDING AUGUST 29, 1931

——, Karlsruhe, Hamburg, 670 rolls paper.

——, Karlsruhe, Hamburg, 725 bls. jute bagging.

PORTLAND, ME., IMPORTS

WEEK ENDING AUGUST 29, 1931

Lagerloef Trading Co., Korsholm, Kotka, 1880 bls. sulphate; 820 bls. wood pulp; 508 bls. sulphite.

Lagerloef Trading Co., Korsholm, Kemi, 901 bls. sulphate.

Lagerloef Trading Co., Korsholm, Rauma, 1166 bls. wood pulp; 4951 bls. sulphite.

Bulkley Dunton & Co., Korsholm, ——, 3000 bls. wood pulp.

Bulkley Dunton & Co., East Indian, ——, 750 bls. wood pulp.

Bulkley Dunton & Co., Ilona Siemers, ——, 750 bls. wood pulp.

BALTIMORE IMPORTS

WEEK ENDING AUGUST 29, 1931

Congoleum Nairn Co., Lorain, Havre, 528 bls. rags.

Bulkley Dunton & Co., Simon von Utrecht, ——, 8875 bls. wood pulp.

Bulkley Dunton & Co., Sparreholm, ——, 3500 bls. wood pulp.

Bulkley Dunton & Co., Griesheim, ——, 1050 bls. wood pulp.

Bulkley Dunton & Co., Carlsholm, ——, 2650 bls. wood pulp.

Bulkley Dunton & Co., Kelkheim, ——, 500 bls. wood pulp.

I. P. Mill Officials Meet at Ft. Edward

FORT EDWARD, N. Y., August 31, 1931.—Many representatives of the various branches of the International Paper Company were in attendance at the conference held here last week. Morning and afternoon sessions were included in the program at which 42 executives were present. Following the meeting the delegation motored to the Corinth plant where an inspection of the mill property was made after which they departed for home.

It has been customary to hold these conferences at the New York office of the company several times a year when the executives of the various plants were asked to attend. The meeting here was the first to be held at a manufacturing branch and a general discussion of business affairs took place. It is believed that the new method of holding conferences will meet with more favor from mill men as it brings the operating and business departments in contact with each other for the study of complications which often arise especially in cost production.

Paper Index Number

WASHINGTON, D. C., August 26, 1931.—July paper and pulp wholesale price index number was 80.1 compared with 80.3 for June and 83.8 for July of last year taking 1926 at 100 according to the Bureau of Labor Statistics, Department of Labor.

Jack Rose Leaves Southern Kraft Corp.

Jack Rose has resigned from the sales division of Southern Kraft Corporation to become general sales manager of Bayless Manufacturing Corporation.

While everybody in Southern Kraft regrets to have him leave, and did everything they could to keep him in the family, (Jack himself spent many an unhappy hour wondering what to do) they all rejoice with him in the splendid opportunity he has in his new position.

J. Kindleberger Undergoes Operation

KALAMAZOO, Mich., August 31, 1931.—Jacob Kindleberger, president of the Kalamazoo Vegetable Parchment Company, Monday, August 24, underwent a major operation at Bronson hospital, in which it was necessary to remove his gall bladder. The trouble developed suddenly and attending surgeons declare his condition as highly favorable.

Cost and Technical Men Meet

KALAMAZOO, Mich. August 31, 1931.—The Cost and Technical Association, Kalamazoo Valley Division, listened to two papers at its Thursday evening meeting. Frank Libby, of the Kalamazoo Vegetable Parchment Company, handled the subject "Technique of Color Matching." Glen Ingling, of the Kalamazoo Paper Company, read a paper on "Cost of Colors."

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"FORSHAGA"
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protects your rolls and insures their delivery to your customer in perfect condition. They eliminate claims for damages.

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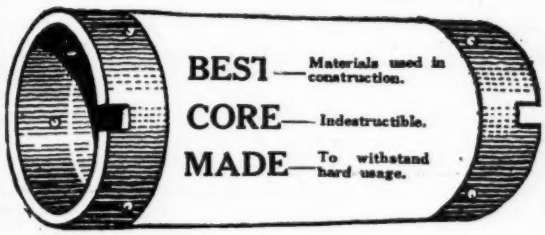

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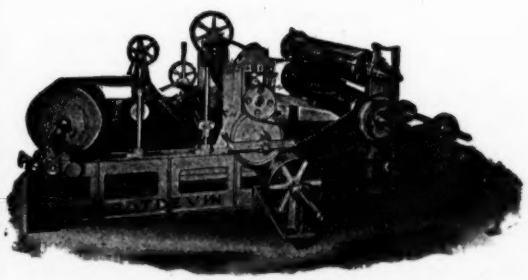

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, September 2, 1931.

Trading in the local paper market during the past week was only moderately active. Demand for the various grades of paper is not expected to increase materially until after Labor Day. Sales forces of the leading paper organizations are planning a strenuous Autumn campaign and are optimistic over the outlook for the closing months of the year.

Manufacturers of news print paper are maintaining operations in sufficient volume to take care of current requirements. Contract shipments are moving with fair regularity. Consumption should expand gradually from now on until the end of the year, at least. The price situation is practically unchanged.

Conditions in the paper board market are fairly satisfactory. Demand for box board is slightly better. Prices remain unchanged. Although rather quiet at present, the fine paper market is in a sound position. Tissues are going forward at a normal pace. The coarse paper market is practically unchanged. Kraft wrapping paper is moving in seasonal volume.

Mechanical Pulp

Steadiness continues to prevail in the ground wood market. Offerings of both domestic and imported mechanical pulp, while not excessive, are adequate to meet current demand. Inquiries for future account are fairly numerous. Prices are generally holding to previously quoted levels and there is little talk of concessions around.

Chemical Pulp

As usual at this time of the year, the chemical pulp market is quiet. In some instances, prices are easier. Imported easy bleaching sulphite is now quoted at from $2.10 to $2.25; Mitcherlich unbleached at from $1.90 to $2.10; and No. 2 strong unbleached at from $1.70 to $1.80; all on dock, Atlantic ports. Quotations on other grades are unaltered.

Old Rope and Bagging

The old rope market is dull. Paper mill demand for domestic and imported old manila rope is below normal for the time of year. Small mixed rope is also arousing little interest. Prices generally remain unchanged. The bagging market is fairly active. Scrap bagging and roofing bagging are holding up well. Gunny bagging is easy.

Rags

Quietness continues to reign in the domestic rag market. Paper mill request for cotton cuttings is slow. Roofing grades, however, are seasonally active and, as offerings are limited, prices are steady to firm. Mixed rags are rather weak. The imported rag continues listless, although no radical price changes have been recorded.

Waste Paper

The paper stock market is exhibiting a strong undertone. Board mill demand for the lower grades continues brisk, especially for strictly folded news and mixed papers. Old kraft machine compressed bales are in seasonal request. Some improvement was also noticed in the position of the higher grades. Book stock is gradually becoming more active. Prices are steady to firm.

Twine

During the past week sales of the various grades of twine were equal to sales in the corresponding period of the preceding year. Supplies are moving in fairly heavy volume. Inquiries for future needs are moderately persistent and the outlook for the immediate future is promising. Prices are holding to previously recorded levels.

Oswegatchie Sale Arouses Interest

[FROM OUR REGULAR CORRESPONDENT]

GOUVERNEUR, N. Y., August 27, 1931.—The forthcoming sale of the mill property of the Oswegatchie Paper Company early in September at the Lowville court house has created widespread interest among residents of this section. Inquiries are continuing to be received daily by those in charge of the public auction and there are many rumors relative to the disposition to be made of the valuable property.

There is considerable gossip now to the effect that the mill is to be reopened and equipped with modern machinery following the sale. The paper mill itself was constructed comparatively recently following the fire that destroyed the property of the old Aldrich Paper Company and it is said that very little overhauling would be necessary. When the plant was in operation at Natural Dam it required three shifts of workers to take care of the orders and the village experienced an era of prosperity. Since its suspension of operations, however, most of the families have moved away to other localities.

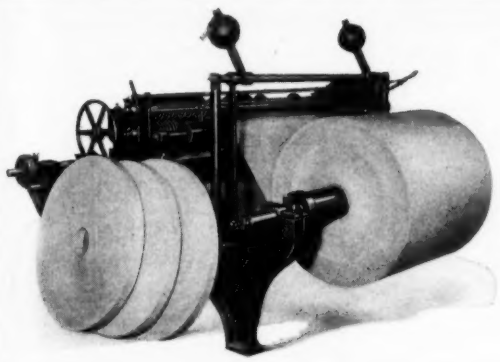
Officials connected with the company are reluctant to discuss the disposition to be made of the property and so far have not expressed themselves in any way regarding the possible opening of the mill after the sale. The company also owns a pulp mill on the Oswegatchie River as well as valuable timberlands.

United Paperboard Co. Reports Loss

The United Paperboard Co. reports an inventory loss of $41,810.74 for the fiscal year ending May 30, 1931.

Sidney Mitchell, president in submitting the report says: "Keen competition prevailed throughout the year, and the selling prices of your company's products declined in value more than could be made up by decreased manufacturing costs through economy in operation. Merchandise and supplies have been reduced to market value, resulting in an inventory loss of $41,810.74.

"The Paper board industry is in a depression which has now continued three years because of over-production. While as yet we have seen no indication of improvement in demand, nevertheless there are new uses being developed for paperboard products which should prove helpful when general conditions return to normal."



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Designed to meet the requirements of all users of Automatic Machines that take the stock from the roll, and require a roll of large diameter wound true and solid.

With this slitter, wide and narrow widths cut at the same time are of uniform tension. A roll slit and rewound 1″ wide and 48″ diameter can be handled without danger of spinning. At very little additional cost per ton paper mills equipped with this Slitter can furnish their customers with paper or board slit and rewound from 1″ width and up. Made in three widths: 48″—60″—72″.

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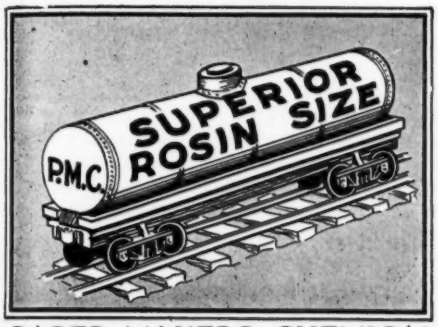

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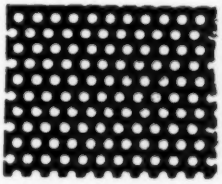

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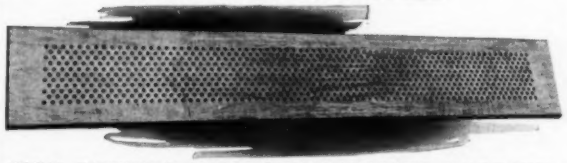

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Miscellanous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, September 2, 1931.

BLANC FIXE.—The blanc fixe market was fairly steady during the past week. Prices are holding to schedule. The pulp is quoted at from $42.50 to $45.00 per ton, while the powder is selling at from 3¾ cents to 4½ cents per pound, in barrels, at works.

BLEACHING POWDER.—Demand for bleaching powder was only moderately active. The contract movement was seasonal. Prices are easy. Bleaching powder is quoted at from $1.75 to $2.00 per 100 pounds, in drums, at works, according to grade and quantity.

CASEIN.—The casein market was quiet. Domestic standard ground is still quoted at 6 cents and finely ground at 7½ cents per pound. Argentine standard ground is selling at 8½ cents and finely ground at 9½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Business in the caustic soda market was dull. Prices are holding to schedule. Solid caustic soda is quoted at from $2.50 to $2.55; while the flake and the ground are selling at from $2.90 to $2.95 per 100 pounds, in large drums, at works.

CHINA CLAY.—Steadiness prevails in the china clay market. Contract shipments are moving in fair volume. Imported china clay is quoted at from $13 to $21 per ton, ship side; while domestic paper making clay is selling at from $7 to $11 per ton, at mine.

CHLORINE.—Conditions in the chlorine market are fairly satisfactory. The contract movement is normal for the season. Prices are generally holding to schedule. Chlorine is quoted at $1.75 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is practically unchanged. The grades of gum rosin used in the paper mills are quoted at from $4.10 to $4.25 per 280 pounds, in barrels, at works. Wood rosin is selling at $3.70 per 280 pounds, in barrels, on dock, car lot quantities.

SALT CAKE.—Trading in the salt cake market is light at present. Prices remain unchanged. Salt cake is quoted at from $16 to $17 and chrome salt cake at from $14 to $15 per ton, in bulk, at works. Foreign salt cake is selling at from $15 to $15.50 per ton, ship side.

SODA ASH.—Supplies of soda ash are moving into consumption in moderate volume. Prices are holding to formerly quoted levels. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1; in bags, $1.15; and in barrels, $1.38.

STARCH.—Some improvement was noticed in the starch market, which is exhibiting a strong undertone. The contract movement is well up to average. Special paper making starch is quoted at $2.67, in bags; and at $2.94 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—The sulphate of alumina market was rather dull during the past week. Prices remain unchanged. Commercial grades are quoted at from $1.25 to $1.40; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—Demand for sulphur is rather light. Sulphur is quoted at $18 per long ton on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton for any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Most of the business transacted in the talc market during the past week was along routine lines. Prices remain unchanged. Domestic talc is quoted at from $16 to $18 per ton, in bulk; while imported talc is selling at from $18 to $22 per ton, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	11.00	@	38.00
Bonds	6.75	@	53.25
Writings—			
Extra Superfine	14.00	@	32.00
Superfine	14.00	@	32.00
Tub sized	10.00	@	15.00
Engine sized	6.75	@	11.00
Book, Cased—			
S. & S. C.	5.25	@	—
M. F.	5.00	@	—
Coated and Enamel	6.75	@	10.25
Lithograph	7.25	@	11.75
Tissues—Per Ream—			
White No. 1	.65	@	.70
Anti-Tarnish M. G. only	.65	@	.70
Colored	.70	@	.90
White No. 2	.55	@	.60
Kraft	.65	@	.70
Manila	.55	@	.60
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	3.37½	@	—
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.00	@	3.00
Card Middles	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs., No. 1	.09¼	@	—
No. 2	.11¼	@	—
Bleached, basis 20 lbs.	.11¼	@	—

(Delivered New York)

News, per ton—			
Rolls, contract	57.00	@	—
Rolls, spot	57.00	@	—
Sheets	62.00	@	—
Side Runs	42.00	@	46.00
Kraft—			
No. 1 Domestic	4.50	@	5.75
No. 2 Domestic	4.00	@	4.50
Southern	3.45	@	4.25
Imported	6.00	@	7.00
Boards—per ton—			
News	26.00	@	27.50
Straw	34.50	@	45.00
Chip	26.00	@	27.50
Binders' Boards	65.00	@	70.00
Standard 85 Test Liner	32.50	@	35.00
Sgl. Mla. Ll. Chip	37.50	@	42.50

(F. o. b. Mill)

Wood Pulp Boards	70.00	@	80.00

Mechanical Pulp

(On Dock)

No. 1 Imported—			
Moist	24.00	@	28.00
Dry	26.00	@	28.00

(F. o. b. Mill)

No. 1 Domestic	25.00	@	30.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—			
Bleached	2.50	@	3.50
Easy Bleaching	2.10	@	2.25
No. 1 strong unbleached	1.90	@	2.25
Mitscherlich unbleached	1.90	@	2.10
No. 2 strong unbleached	1.70	@	1.80
No. 1 Kraft	1.50	@	1.70
No. 2 Kraft	1.40	@	1.50
Sulphate—			
Bleached	2.75	@	3.25

(F. o. b. Pulp Mill)

Sulphite (Domestic)—			
Bleached	2.25	@	4.75
Easy Bleaching	2.50	@	2.75
News	1.80	@	2.50
Mitscherlich	2.40	@	3.00
Kraft (Domestic)	1.60	@	2.75

(Delivered Paper Mills)

Soda Bleached	3.00	@	—

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.50	@	7.00
New White, No. 2	5.50	@	6.00
Silesias No. 1	5.25	@	5.50
New Unbleached	7.00	@	7.50
New Blue Prints	4.00	@	4.50
New Soft Blacks	3.50	@	4.00
Blue Overall	5.00	@	5.25
Fancy	3.00	@	3.50
Washables	2.75	@	3.00
Mixed Khaki Cuttings	3.50	@	4.00
Pink Corset Cuttings	5.00	@	5.50
O. D. Khaki Cuttings	4.50	@	4.75
Men's Corduroy	3.00	@	3.50
New Mixed Blacks	3.00	@	3.25

Old Rags

White, No. 1—			
Repacked	5.25	@	5.75
Miscellaneous	4.25	@	4.75
White, No. 2—			
Repacked	3.00	@	3.50
Miscellaneous	2.30	@	2.50
St. Soiled, White	1.50	@	1.75
Thirds and Blues—			
Repacked	2.25	@	2.50
Miscellaneous	1.65	@	1.85
Black Stockings	3.25	@	3.75
Roofing Rags—			
Cloth Strippings	1.25	@	1.30
No. 1	1.25	@	1.30
No. 2	.90	@	1.00
No. 3	.70	@	.80
No. 4	.65	@	.70
No. 5A	.50	@	.60

Foreign Rags

New Rags

New Dark Cuttings	2.00	@	2.15
New Mixed Cuttings	2.10	@	2.40
New Light Silesias	5.00	@	5.38
Light Flannelettes	5.00	@	5.25
Unbleached Cuttings	6.50	@	6.75
New White Cuttings	6.00	@	6.25
New Light Oxfords	5.00	@	5.50
New Light Prints	3.10	@	3.25

Old Rags

No. 1 White Linens	6.25	@	6.50
No. 2 White Linens	5.25	@	5.50
No. 3 White Linens	3.75	@	4.25
No. 4 White Linens	2.25	@	2.75
No. 1 White Cotton	4.50	@	5.00
No. 2 White Cotton	3.50	@	4.25
No. 3 White Cotton	2.50	@	3.25
No. 4 White Cotton	1.50	@	1.75
Extra Light Prints	1.90	@	2.10
Ord. Light Prints	1.75	@	1.90
Med. Light Prints	1.40	@	1.55
Dutch Blue Cottons	1.50	@	1.60
French Blue Linens	2.25	@	2.40
German Blue Linens	2.00	@	2.10
German Blue Cottons	1.35	@	1.40
Checks and Blues	1.40	@	1.45
Lindsay Garments	.90	@	1.00
Dark Cottons	.70	@	.75
Old Shopperies	.65	@	.70
New Shopperies	.60	@	.65
French Blues	1.40	@	1.50

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.55	@	1.65
Domestic	1.65	@	1.80
Wool Tares, light	1.15	@	1.20
Wool Tares, heavy	1.15	@	1.20
Bright Bagging	1.10	@	1.15
Small Mixed Rope	.90	@	1.00
Manila Rope—			
Foreign	1.75	@	1.85
Domestic	1.90	@	2.00
New Burlap Cut	1.70	@	1.80
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
Hard, white, No. 1	2.65	@	2.85
Hard, white, No. 2	2.10	@	2.20
Soft, white, No. 1	2.10	@	2.20
White envelope cuttings	2.35	@	2.50
Flat Stock—			
Stitchless	.70	@	.80
Overissue Mag	.70	@	.80
Solid Flat Book	.60	@	.70
Crumpled No. 1	.48	@	.53
Solid Book Ledger	1.75	@	1.85
Ledger Stock	.65	@	.75
New B. B. Chips	.20	@	.30
Manilas—			
New Env. Cut	1.75	@	1.85
New Cuttings	1.40	@	1.50
Extra No. 1 old	1.10	@	1.25
Print	.45	@	.50
Bogus Wrapper	.45	@	.50
Container	.30	@	.35
Old Kraft Machine—			
Compressed bales	1.20	@	1.30
News—			
No. 1 White News	1.60	@	1.65
Strictly Overissue	.35	@	.45
Strictly Folded	.25	@	.30
No. 1 Mixed Paper	.25	@	.30
Common Paper			Nominal

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Twines

(F. o. b. Mill)

Cotton—			
B. C., 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finished Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.13	@	—
No. 2	.11	@	—
Tube Rope—			
4-ply and larger	.09	@	—
Fine Tube Rope—			
4-ply	.11	@	—
3-ply	.12	@	—
2-ply	.13	@	—
Paper Makers Twine Balls	.07	@	—
Box Twine, 2-3 ply	.07	@	.08
Jute Rope	.09	@	.10
Amer. Hemp, 6	.27	@	.29
Java Sisal—			
No. 1 Basis	.10	@	—
No. 2 Basis	.09	@	—
New Zealand Sisal	.10	@	—
Sisal Lath Yarn—			
No. 1	.12	@	.14
No. 2	.10	@	.12
Manila Twine	.21	@	.22

CHICAGO

Paper

(F. o. b. Mill)

Rag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¾	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¾	@	.06¼
No. 1 S.&S.C. Book	.06¼	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¼	@	.05¾
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.04	@	.04½
No. 1 Kraft	5.00	@	5.50
Southern Kraft	3.75	@	4.00
No. 2 Kraft	3.75	@	4.00
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.07	@	.07½
White Tissue	.07¼	@	.07½

(Delivered Central Territory)

News, per ton—			
Rolls, contract	57.00	@	—
Sheets	62.00	@	—
Boards, per ton—			
Plain Chip	30.00	@	35.00
Solid News	32.50	@	37.50
Manila Lined Chip	40.00	@	45.00
Container Lined—			
85 Test	50.00	@	55.00
100 Test	55.00	@	60.00

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	2.35	@	2.40
White Env. Cuttings	—	@	—
No. 1 Soft Shavings	2.10	@	2.15
Ledger & Writings	.70	@	.75
Solid Books	.75	@	.80
Blanks	1.60	@	1.65
Krafts	1.25	@	1.35
New Kraft Cuts	1.35	@	1.45
Manila Env. Cuts	1.50	@	1.55
Ex. No. 1 Manila	1.25	@	1.30
Print Manila	.40	@	.45
Overissue News	.40	@	.45
Old Newspapers—			
No. 1	.35	@	.40
No. 2	.30	@	.35
Mixed Papers—			
No. 1	.28	@	.30
No. 2	.20	@	.25
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

(F. o. b. Mill)

Bonds	.05	@	.40
Ledgers	.07	@	.40
Writings—			
Superfine	.12	@	.18
Extra fine	.16	@	.22
Fine	.15	@	.26
Fine, No. 2	.12	@	.25
Fine, No. 3	.07	@	.20
Book, M. F.	.04¾	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.07	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.07	@	.09
Manila Sul., No. 1	.03¼	@	.05½
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06
No. 2 Kraft	.03¾	@	.04¼
Southern Kraft No. 1	—	@	.04
Southern Kraft No. 2	—	@	.03¾
Common Bogus	.03	@	.04

(Delivered Philadelphia)

News Print Rolls	58.00	@	62.00
Straw Board	50.00	@	—
News Board	29.00	@	30.00
Chip Board	25.00	@	27.50
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	75.00	@	—
No. 2, per ton	66.00	@	—
Carload lots	62.00	@	67.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.06	@	.06½
New White, No. 2	.05	@	.05½
Light Silesias	.05	@	.05½
Silesias, No. 1	.06	@	.08
Black Silesias, soft	.05	@	—
New Unbleached	.06	@	.06½
Washable, No. 1	.02½	@	.03
Blue Overall	.05	@	.05½
Cottons—According to grades—			
Washable, No. 2	.02	@	.02½
New Blue	.02	@	.02½
Fancy	.03	@	.03¾
New Black Soft	.03	@	.03½
New Light Seconds	.01¾	@	.02
New Dark Seconds	1.85	@	2.00
Khaki Cuttings—			
No. 1 O. D.	.04½	@	.05
No. 2 Mixed	.03½	@	.04
Corduroy	.02½	@	.03
New Canvas	.06½	@	.07
New Black Mixed	.03	@	.03½

Domestic Rags (Old)

White No. 1—			
Repacked	3.50	@	4.00
Miscellaneous	2.25	@	2.75
M. G.	4.50	@	—
Thirds and Blues—			
Miscellaneous	1.25	@	1.50
Repacked	1.75	@	2.00
Black Stockings (Export)	3.80	@	4.00
Roofing Stock—			
Foreign No. 1	1.15	@	1.25
Repacked	.80	@	.90

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.60
Domestic	1.75	@	—
Manila Rope	2.25	@	2.50
Sisal Rope	1.25	@	1.50
Mixed Rope	1.10	@	1.25
Scrap Burlaps—			
No. 1	1.50	@	1.60
No. 2	1.10	@	1.20
Wool Tares, heavy	3.00	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.50	@	2.75
New Burlap Cuttings	2.00	@	2.25

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.30	@	2.35
No. 2 Hard White	2.00	@	2.05
No. 1 Soft White	1.75	@	1.85
No. 2 Soft White	1.30	@	1.45
No. 1 Mixed	.75	@	.80
No. 2 Mixed	.50	@	.55
Solid Ledger Stock	1.25	@	1.30
Writing Paper	.70	@	.80
No. 1 Books, heavy	.75	@	.80
No. 2 Books, light		Normal	
No. 1 New Manila	1.60	@	1.75
No. 1 Old Manila	1.25	@	1.30
Print Manila	.40	@	.50
Container Manila	.40	@	.45
Old Kraft	.90	@	1.05
Common Paper	.20	@	.25
No. 1 Mixed Paper	.25	@	.30
Straw Board, Chip	.35	@	.40
Binders Board, Chip	.35	@	.45
Corrugated Board	.40	@	.45
Overissue News	.35	@	.40
Old Newspaper	.25	@	.30

BOSTON

Paper

(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.12½
Rag Content	.15	@	.30
All Rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04½	@	.05½
No. 2 Kraft	.03¾	@	.04½

(F. o. b. Boston)

Southern Kraft	.03¾	@	.04

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)

Common Bogus	.02	@	.02¼

(Delivered New England points)

News Print, rolls	—	@	56.50
Straw Board, rolls	.009	—	@52.50
Straw Board in Sheets, basis 35s to 70s	—	@	50.00
Filled News Board	27.50	@	30.00
Chip Board	27.50	@	—
Chip Board (Creasing)	27.50	@	30.00
Single Manila Lined Chip	40.00	@	45.00
Single White, Patent Coated News Board—Binder	52.50	@	60.00
Wood Pulp Board	70.00	@	75.00
Binder Boards	67.50	@	75.00

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.75	@	3.50
No. 2 Hard White	2.25	@	2.50
No. 1 Soft White	2.00	@	2.25
No. 2 Mixed	.60	@	.65
No. 1 Mixed	.90	@	1.00
Solid Ledger Books	1.75	@	2.00
Overissue Ledger Stock	1.35	@	1.60
Mixed Ledgers	1.15	@	1.30
No. 1 Books, heavy	.60	@	.65
No. 1 Books, light	—	@	.45
Crumpled Stitchless Book Stock	1.00	@	1.25
Manila Env. Cuttings	1.85	@	2.00
No. 1 Old Manila	—	@	1.00
White Blank News	1.50	@	1.60
Kraft No. 1	—	@	1.25
Manila	.80	@	.90
No. 1 Mixed Paper	.16	@	.20
Print Manila	.35	@	.40
Overissue News	—	@	.40
Old Newspapers	.25	@	.30
Box Board, Chip	.16	@	.20
Corrugated Boxes	.35	@	.45

Bagging

(F. o. b. Boston)

Gunny No. 1—			
Foreign	1.55	@	—
Domestic	1.50	@	—
Manila Rope—			
Foreign	—	@	1.75
Domestic	—	@	2.00
Transmission Rope	1.40	@	1.50
Mixed String	.50	@	.55
Jute Rope	1.00	@	1.15
Jute Carpet Threads	.75	@	.90
Bleachery Burlap	2.50	@	2.75
No. 1 Scrap Burlap	1.10	@	1.25
Scrap Sisal	1.35	@	1.45
Scrap Sisal for shredding	1.50	@	1.60
Wool Tares, heavy	1.25	@	1.30
New Burlap Cutting	1.50	@	1.25
Australian Pouches	2.00	@	2.25
Heavy Baling Bagging	1.50	@	1.60
Paper Mill Bagging	.90	@	1.05
Bagging No. 2	.50	@	—
No. 1 Burlap	—	@	3.50

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1.	.06½	@	.07
New White No. 2.	—	@	.06
Silesias No. 1	.06	@	.06¼
New Black Silesias	.02½	@	.02¾
New Unbleached	—	@	.08
Fancy	.04	@	.04½
Washable	.04	@	.04½
Cottons—According to grades—			
Blue Overalls	.05	@	.06
New Black, soft	.04	@	.04¼
Khaki Cuttings	.04	@	.04½
O. D. Khaki	.04½	@	.05
Corduroy	.03	@	.03½
New Canvas	.08	@	.08½

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	4.75	@	5.25
Miscellaneous	—	@	4.00
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Twos and Blues	2.50	@	2.75
Thirds and Blues—			
Repacked	1.60	@	1.80
Miscellaneous	1.00	@	1.20
Black Stockings	3.25	@	3.50
Roofing Stock—			
No. 1	—	@	.63
No. 2	—	@	.58
No. 3	—	@	.53

Foreign Rags

(F. o. b. Boston)

Dark Cottons	—	@	.70
New No. 1 White Shirt Cuttings	6.50	@	6.75
Dutch Blues	—	@	1.80
New Checks & Blues	4.00	@	4.50
Old Fustians	1.55	@	1.65
Old Linsey Garments	.80	@	.90

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.10¾	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.11¾	@	—
No. 2 Colored	.09	@	.10½
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (carloads)	6.65	@	—
No. 3 M. F. (carloads)	6.20	@	—
No. 1 S. C. (carloads)	7.15	@	—
No. 3 S. C. (carloads)	6.65	@	—
No. 4 S. C. (carloads)	5.70	@	—
No. 1 Coated and Litho	12.50	@	—
No. 2 Coated and Litho	11.50	@	—
No. 3 Coated and Litho	10.00	@	11.50
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.95	@	—
White Wrap	5.25	@	—
"B" Manila	5.00	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
Kraft No. 2	5.40	@	—

(Delivered Toronto)

News, per ton—			
Rolls (contract)	56.50	@	57.00
Sheets	61.50	@	—

Pulp

(F. o. b. Mill)

Ground Wood	30.00	@	32.00
Sulphite easy bleaching	50.00	@	—
Sulphite, news grade	44.00	@	—
Sulphite, bleached	62.50	@	75.00
Sulphate	60.00	@	—

Old Waste Paper

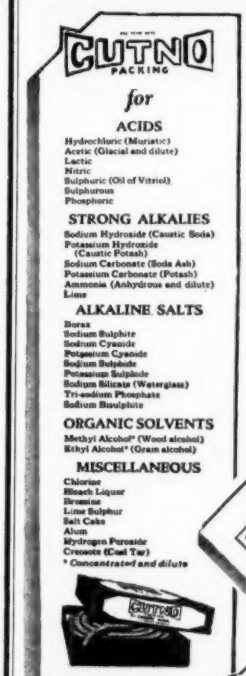
(In carload lots, f. o. b. Toronto)

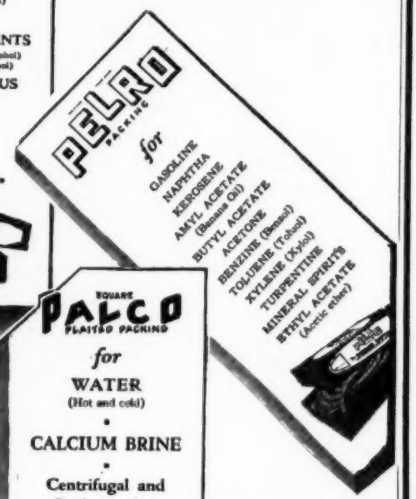
Shavings—			
White Env. Cut	2.80	@	—
Soft White	2.60	@	—
White Blk. News	1.50	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.10	@	—
Light and Crumpled Book Stock	1.20	@	—
Ledgers and Writings	—	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	.80	@	—
Kraft	1.90	@	—
News and Scrap—			
Strictly Overissue	.70	@	—
Strictly Folded	.70	@	—
No. 1 Mixed Paper	.60	@	—

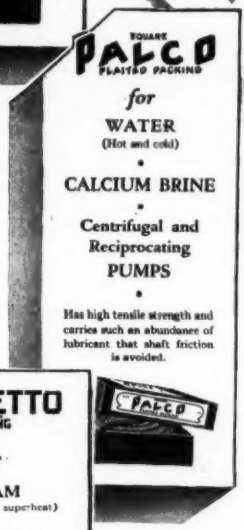
Domestic Rags

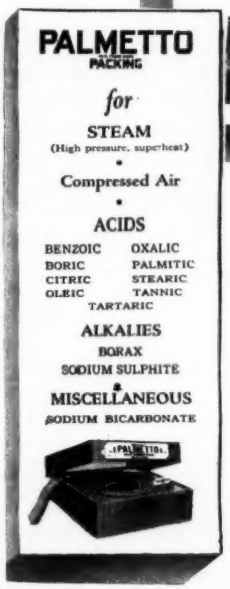
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09½	@	.10
Fancy Shirt Cuttings	.06	@	.06¼









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ESTABLISHED 1872

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

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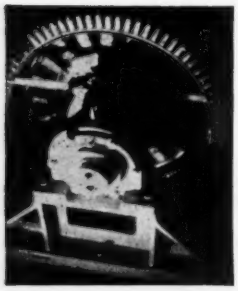

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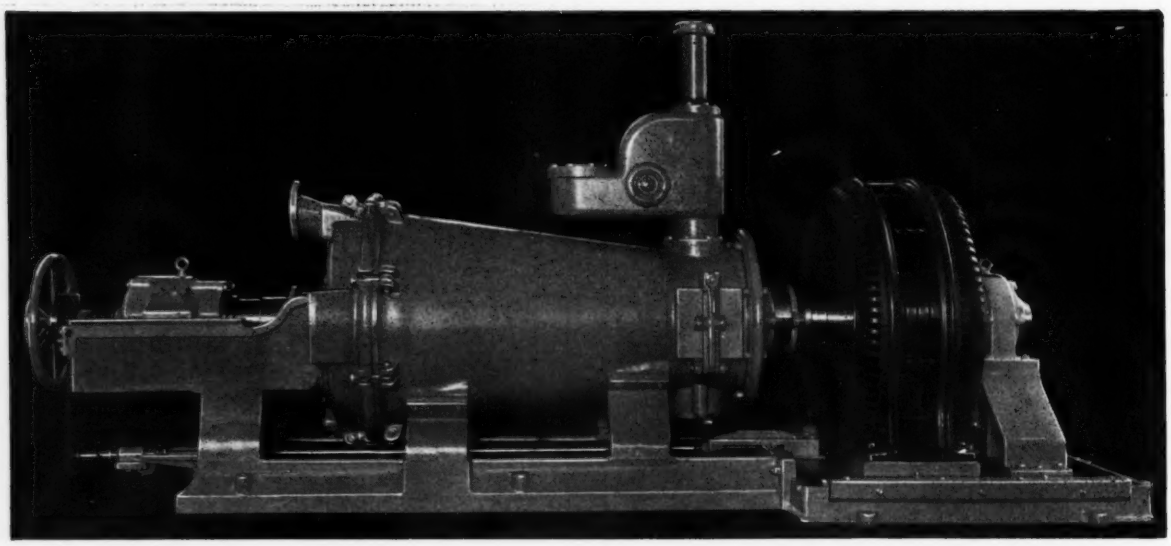

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